Southwestern aviation

January, 1946

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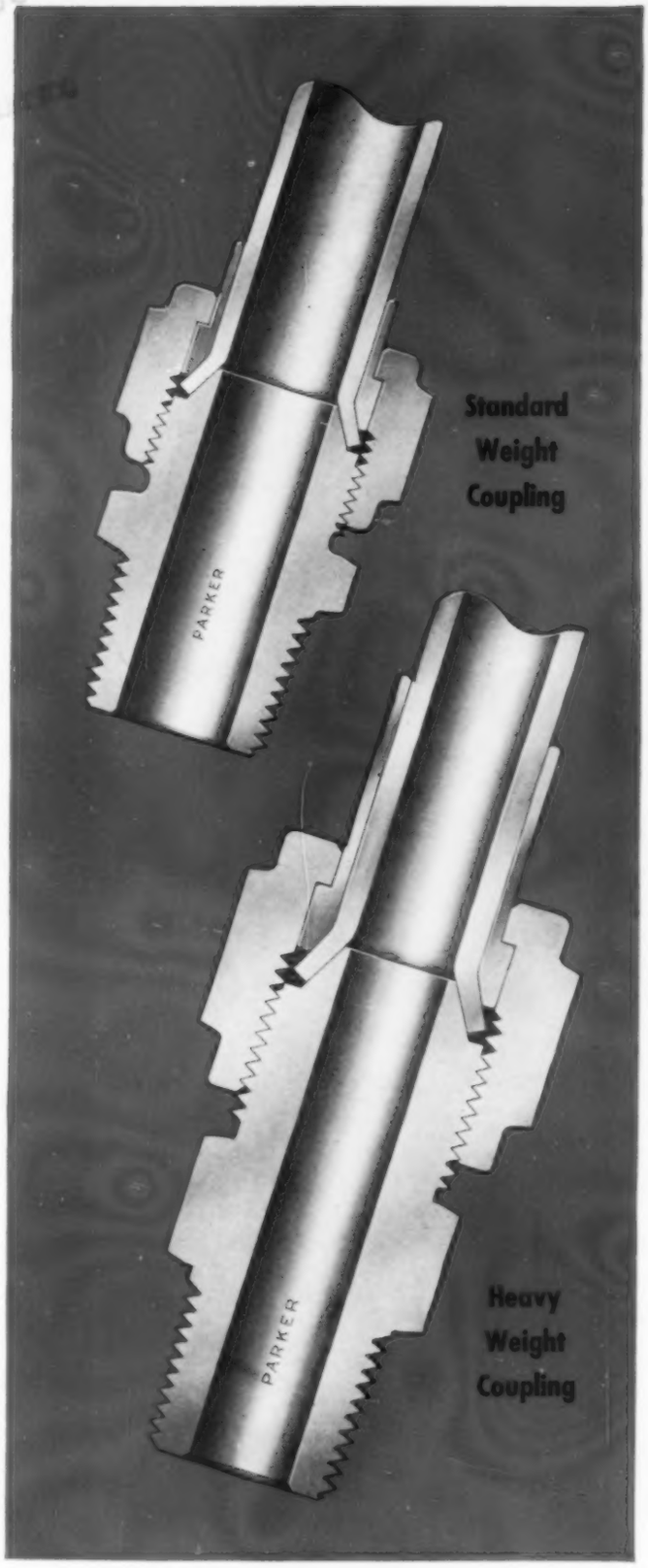

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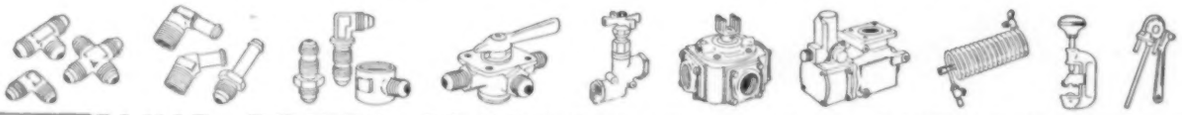

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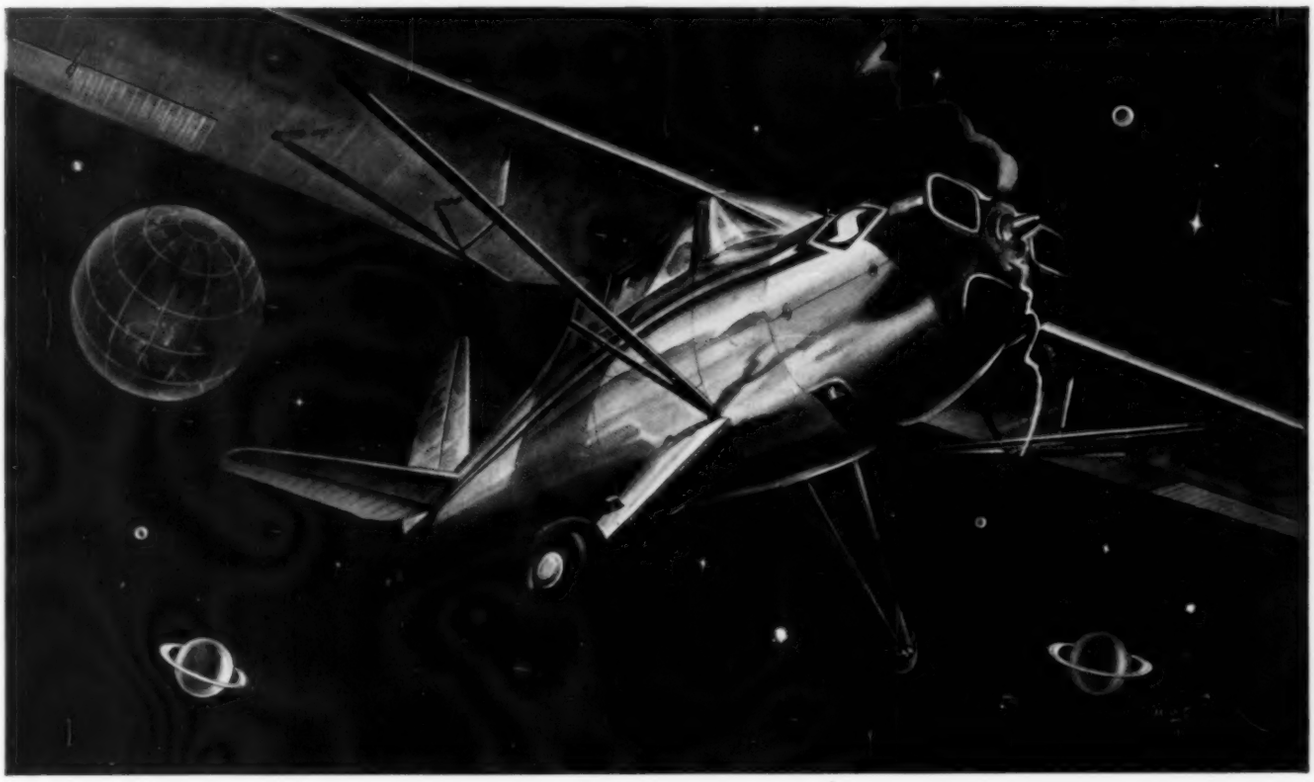

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Revving Up

First lightplanes of new design and quantity production to receive CAA approved type certificates are Globe's two-place 85-hp. Swift and Cessna's two-place 85-hp. postwar model. Official performance data on the two planes were not available at press time.

Lightplane engineers are studying the new Part 03 of Civil Air Regulations, available only recently, which establishes the four categories of "normal," "utility," "acrobatic" and "restricted purpose" for the purpose of certification. Airplanes certificated as a type on or after January 1, 1947, must comply with Part 03, but there are exceptions to provide for designs which were well under way prior to November 13, 1945. Engineers are finding the new requirements more lenient for "normal" and "utility" airplanes but more stringent for "acrobatic" types. Among other things, Part 03 requires the manufacturer to mark safe and maximum operating limits on the airplane's instruments. Landing speeds have been raised to a maximum of 70 mph. Stability requirements are more stringent, particularly for longitudinal stability. Gust conditions are provided for in ground loads not required by Part 04.

The second annual Fourth Region non-scheduled operators conference, sponsored by the regional National Aviation Trades Association, Fourth Region CAA officials and SOUTHERN FLIGHT, will be held at Fort Worth, February 25, 26 and 27. Headquarters will be at the Texas Hotel, according to Bill Berry, CAA Fourth Region private flying specialist and general chairman of the conference.

Surplus Navy SNJ-3's (North American 650-hp. AT-6 trainers) will be used by CAA inspectors instead of BT-13's recently acquired. SNJ has hydromatic, constant-speed propeller which is quieter than BT's two-position noise-maker prop. Other surplus craft allocated to CAA include two four-engine C-54's for the Standardization Center in Houston, and seven DC-3's. The surplus plane allocation was authorized by Congress in lieu of appropriations for purchase of new aircraft.

An experimental single-seat Luscombe of new design was flown on a cross-country recently. It is powered by a 65-hp. Continental and is a low-wing all-metal craft, which has cruised 130 mph. on cross-country.

A one-day non-profit air show featuring exhibition and demonstration of new lightplane models will be held on February 21 at Lowe Field, Sarasota, Florida, under sponsorship of the Junior Chamber of Commerce there. A three-hour afternoon program will include races, contests, exhibitions, crop dusting, jumps and new plane demonstrations, and pilots who can attend should write Jack H. Finney, chairman, Box 710, Sarasota, Florida, and carry their own tie-downs.

A national conference on women in aviation will be held April 22-24, 1946, at Stephens College, Columbia, Missouri, with planning in charge of a steering com-

(Continued on page 22)

SOUTHERN
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Twelfth Year of Progress With Aviation

JANUARY, 1946 VOL. XXV. NO. 1

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SHOP TYPE—Shown above is an ERWIN-NEWMAN prefabricated sectional steel hangar at Chanute, Kansas. Tailor-made hangars may be had in sizes from 40 x 30 on up.

WHEN you turn to ERWIN-NEWMAN for hangars, you not only get sizes and types "custom built" to your exact requirements . . . but you get the *economy* of quantity production of standard sections and the *proved design* of standard models. All steel—ERWIN-NEWMAN hangars are *fire-resisting* and *long-lived*. Sectional—ERWIN-NEWMAN hangars may be *quickly erected* and *easily enlarged*. Portable—they may be disassembled and reassembled at a new location, quickly and economically.

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For private plane storage nothing can equal the ERWIN-NEWMAN Nested-Tee design shown below. It can be built to accommodate separately 2, 4, 6, 8, 10 or 12 planes in one hangar. The Nested-Tee type can be started as a small unit—and added to as later needs dictate. It is offered in two sizes—for small and medium planes.

The floor plan below shows how an individual stall is provided for each ship. This eliminates the danger of damage which often occurs when moving ships around in a crowded open hangar. The extra rooms at two corners are utilized for office, club room, shop, store room, or other special purposes.

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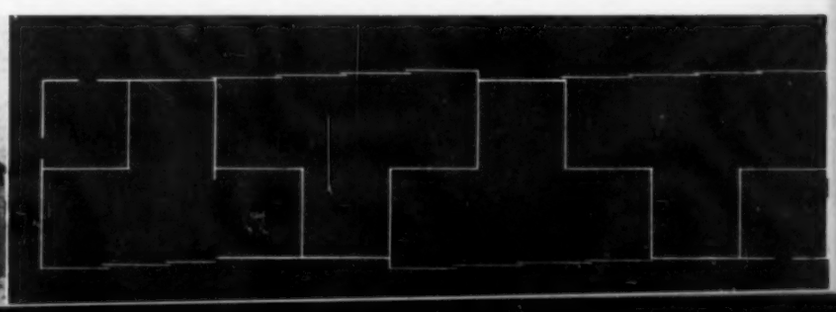
NESTED-TEE TYPES—Illustrated below (with floor plan at right) is a typical 4-unit ERWIN-NEWMAN Nested-Tee storage hangar. Available for small or medium size ships—4 to 12 units.



JUST AMONG OURSELVES

Editorials and Comment

INVENTORY 1946

ANY realistic appraisal of the U. S. aviation industry in these transitional times must take into account certain pessimistic or negative factors that hang heavily, like threatening clouds, over the uncharted flight paths ahead for 1946. We do not want to leave the inference that optimism should be thrown out the window because there is ample reason for optimistic attitudes at many points on the compass. But we do insist that unqualified optimism in aviation circles at this time is both false and dangerous.

Since the very preservation of the nation as a political, social and economic entity depends upon our ability to defend ourselves in the face of any eventuality, let's first inventory the present status of air power as we enter the first year of peace. At this writing the dissipation of air power in every segment—production, research, technically trained manpower, machine tools, military personnel, bases and first line fighting aircraft—is taking place at such a rapid rate a few months hence should find us little better off than we were in the first few months of 1942. The most optimistic predictions point to a maximum of 3,000 to 5,000 new military airplanes for our air services in 1946, which represents a few weeks' production for our war-expanded industry.

Meanwhile excellent "interim" combat aircraft are being destroyed ruthlessly. The exodus of military air personnel from uniform to civilian life is so rapid (without an intelligent program for a protective reserve force) the chances are that American air power will wind up as puny and emaciated as our engineering, research and production capacity. Insofar as our handling of air power at this insecure time is concerned, we are inviting disaster. Until the United Nations Organization is completely established and proven beyond the shadow of a doubt that it will be completely capable to deal with international problems and difficulties, we have only ourselves to depend upon. At this grave and uncertain hour in world history we're throwing away our most valuable implements of defense. The tragic part of this sad situation is apathy on the part of the American people and their political leadership. There's far more interest in the question of who is to rule conquered Japan or in the price of whiskey stocks than in the preservation of sufficient military protection during the next year or two.

On the brighter side of the ledger are the immediate prospects for expansion in scheduled domestic and international air transport. On the domestic scene, however, there seems to be little hope for the extension of air service to many cities and towns not now served by the scheduled air carriers. The blind and over-cautious Civil Aeronautics Board simply can't get interested in logical small-fry operations which can provide passenger, mail and express services to the millions of tax-paying American citizens now being penalized because they live and do business in an average size community rather than a large metropolitan center. As a result of this antediluvian thinking within the framework of the Federal agency (which is charged with the *promotion* and *development* of commercial aviation) less than 800 transport aircraft probably will be operating over American foreign and domestic routes by the end of the year. Hence the CAB on the one hand denies air service to hundreds of communities in which public convenience and necessity can be proved and on the other hand creates an automatic, empirical prohibition of employment to thousands of war veterans ready, willing and able to do the job.

Finally, our January inventory brings us to the sleeping giant of aviation — non-scheduled operations and private flying. In this many-faceted branch of the aviation family can be found the most paradoxes, problems, uncertainties and enigmas. While the non-flying empire-building prophets in Washington are ready with all the answers, the men and women who own, fly for business or pleasure, manufacture, operate or provide miscellaneous aviation services to the general public, and who have their own hard-earned, unsubsidized dollars invested in the flying machine, simply can't stomach the unadulterated eye-wash emanating from the very Washington bureaucrats who have been superimposed on them, apparently to regulate them out of existence. Non-scheduled aviation's principal headache for 1946 springs from the same old ulcer it has always suffered — an impractical, expensive, restrictive and absolutely ridiculous system of Federal regulation. There's one ray of hope in this department; it is a growing conviction among non-scheduled airmen that a general house-cleaning and complete rearrangement of the Federal agency and an overhaul of Federal aviation policy is not only necessary but within the realm of possibility just as soon as Congress can get squared away on matters of greater moment.

On the non-scheduled scene the chances are none too bright for the early construction of thousands of unpretentious sod landing fields, the need for which becomes more acute with the passing of each week. Likewise, the hangar shortage situation, already past the acute stage, promises to become a major detriment to private flying whether the industry sells 15,000 or 35,000 new airplanes during the year. The manufacturers themselves are still fighting material shortages and high production costs and it is doubtful whether they can supply the demand early enough in 1946 to avoid the cancellation of many orders now on the books. Some distributors and dealers already are feeling the results of purchaser discouragement over the black outlook for early delivery. With some manufacturers accepting more orders than they possibly can fill in the next twelve months, this practice might boomerang to the detriment of the industry as a whole as well as the manufacturer and sales agency involved. Any survey of the sales and service phase of aviation would be amiss if it did not point out the serious need for improvement in the code of ethics, unwritten though it may be, which impaired non-schedueld aviation in the prewar years more than most people will admit. It is even more important to clean up our house now and force fair and honest trade practices if we are to attract realistic business and professional people into airplane ownership and operation.

The overall aviation outlook for 1946 is reasonably bright with the exception of air power's fate. There are no insurmountable problems; but the ones that loom large on the horizon at this time must not be ignored or neglected. The total energy, vision and

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co-operative effort of all the people whose pocketbooks depend upon what course aviation follows during the next twelve months will be needed if the industry is to realize the bright hopes and expectations all of us naturally hold for postwar aviation.

Impregnable air power can and must be maintained. Scheduled services, including mail, can and must be extended to more of our people whether the CAB will act or not. Untouched but practical adaptations of the airplane to every field of human endeavor from industry and agriculture to education and recreation can and must be pushed to the limit of the modern airplane's utility.

Getting the airports built, the hangars erected, new airlines established, Federal, state and municipal governments on the beam and adequate ground facilities and services installed in preparation for the long-heralded "Flying Age" isn't going to be a pushover job. Aviation faces one of the most complex as well as one of the most significant tasks a relatively new and expanding industry ever faced. For those who bounce into 1946 looking for a get-rich-quick boom, an aviation bed of roses and that elusive pot of gold at the foot of the multi-colored rainbow, we fear there will be little more reward than weeping, wailing and gnashing of teeth. If, however, we realistically face the issues and go to work on all the common problems staring us in the face, the long haul will produce stable and substantial expansion and profitable operations for the people in the business.

☆ ☆ ☆

DRIPPY DREW

MODERN journalism has produced many interesting types of daily columnists but the most amazing among them are those limited few who presume to know-it-all-about-everything and proceed to write, day after day, year after year, as if they actually did know all, see all and hear all. The most fantastic person among these journalistic monstrosities is one Drew Pearson, whose column we've had the questionable pleasure of reading in our hometown newspaper on and off over a period of years. We've come to the conclusion that Brother Pearson is a hybrid sort of critter consisting of a sprinkling of Eleanor Roosevelt, a dash of Walter Winchell and portion of Brisbane. Furthermore, we've come to the conclusion that "Drippy Drew" has a mighty low batting average every time he makes a reportorial excursion into the aviation field. After reading his columns in December "exposing" the sale of the first DC-4 to Japan in 1938, we're now convinced that if his reports and interpretation of news covering all the other subject he works on are as misleading, dishonest, full of half-truths and totally discolored as was his treatment of the Douglas story, Mr. Pearson's days surely must be numbered.

Unfortunately, there's not enough paper available to tear into Mr. Pearson's columns on the sale of the first DC-4 to Japan piece by piece and expose the author in his true light—a journalistic charlatan. His charges are so absurd and his not-too-clever distortion of facts so obvious that any reader of average intelligence won't be prejudiced against one of the nation's finest aircraft manufacturing companies. To airmen, the Pearson "expose" is actually laughable.

We happened to be around when that first experimental DC-4 was sold to the Japs. We talked to the pilot who took it to Japan and checked the little yellow pilots out on it. We later heard they cracked it up beyond repair and then forgot all about the incident. There was no secret to the sale and no chicanery as Mr. Pearson would have his readers believe. If Douglas was up to any dirty work about the only accusation that could be made was that they pulled a fast deal on the Nips. But Mr. Pearson's aeronautical knowledge is so limited he probably doesn't realize that the first experimental model of any kind of airplane is practically worthless from a resale or flying utility standpoint. Mr. Pearson also reveals his ignorance and/or the fact that somebody needled him into writing his blasphemous columns by referring to the DC-4 in 1938 as the Douglas company's "latest Flying Fortress" and "one of the finest bombers ever constructed."

Both the Army and the Navy approved the sale of this experimental model to Japan because they weren't interested in the design. Douglas recovered only a small portion of its tremendous developmental investment in the airplane at a time when it was receiving practically no U. S. military orders and very few commercial orders. Some people have forgotten how poverty-stricken, how small and how visionary the American aviation industry was in 1938. Had it not been for a few paltry orders from domestic commercial aviation and foreign governments, most of our factories would have been bankrupt. The United States was not interested in air power and the paltry sums appropriated for military airplanes in that era stands as incontestable witness to the fact. Thank heavens the Japs bought some of our airplanes, including duds. And thanks to the French, the British, the Swedes and all the other nations who sent our manufacturers orders which helped sustain them until our statesmen and political leaders woke up to what was going on.

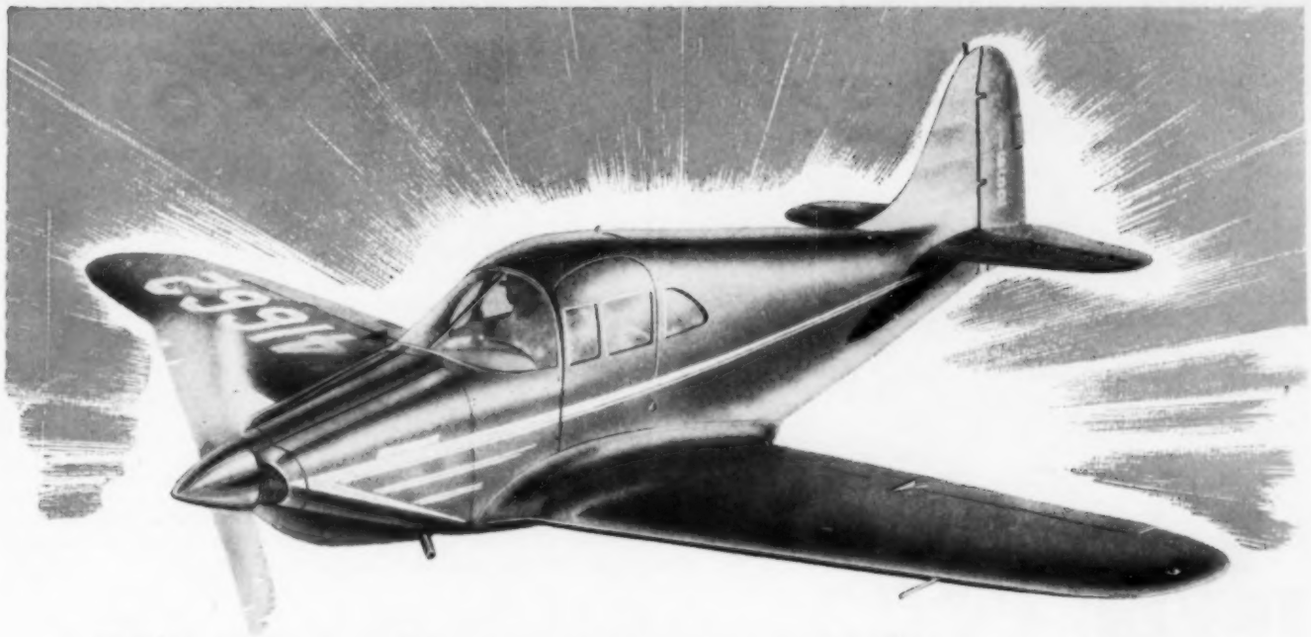
Mr. Pearson might better tell the story of the Douglas DC-3 and the part it played in the invasion of Europe. He might write a column or two on the perfection of the DC-4, partially made possible through the cash that came from the sale of the useless prototype to the Japs, and the magnificent role its military counterpart, the C-54, played in the defeat of Japan. But that would require aeronautical knowledge and perhaps some technical research and we daresay Mr. Pearson, knocking out a column every day on every subject from shoes to sealing-wax, is simply too busy to bother about that.

☆ ☆ ☆

THE ADMA

MANUFACTURERS and distributors of aeronautical products will be wise to investigate and study the work of the Aviation Distributors and Manufacturers Association in the event they do not belong to the organization. Rounding out its third successful year of operation last month with a convention in Cleveland, Ohio, ADMA is well on its way to becoming one of the industry's most useful trade organizations. We gathered from what we saw and heard at the Cleveland meeting that it might not be the largest from the standpoint of membership (some seventy-five firms at this writing) but from the standpoint of getting jobs done and delivering effective service to its members, ADMA is right at the top.

The work of the Aircraft Distributors and Manufacturers Association will go far in providing better service and lower costs to the long-forgotten man in aviation—the consumer. Members of ADMA are bound to contribute materially to civil aviation.



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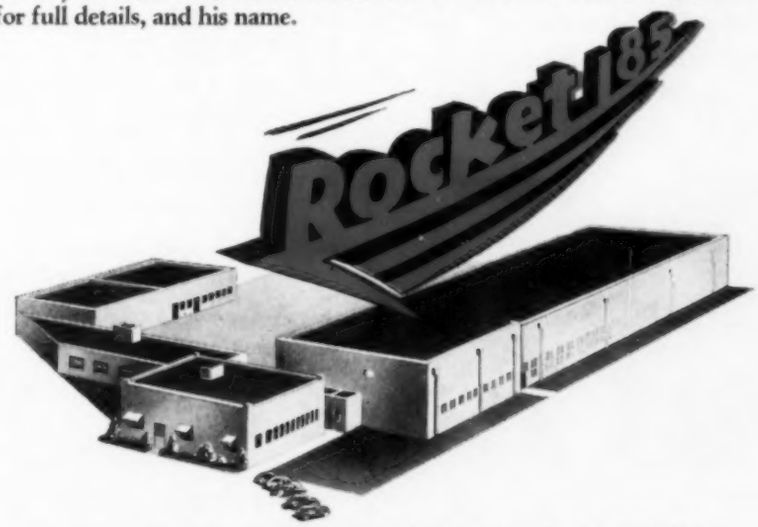

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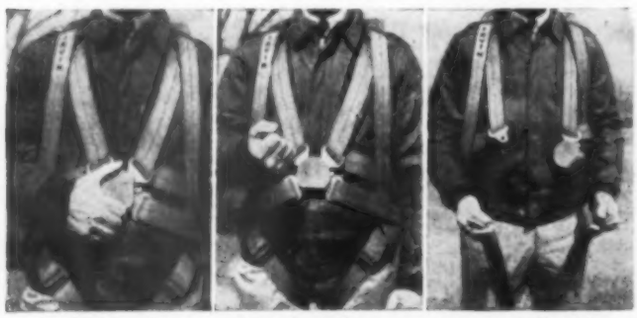

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AIR REPORT

☆ SIGNIFICANT TRENDS IN THE NEWS

Reversible Propeller for Seabee

Republic Aviation is experimenting with a reversible-pitch propeller on the four-place Seabee amphibian. The prop is by Hartsell and is one of the most significant light-plane developments in recent years. It is said to contribute much to the Seabee's water-handling characteristics, allowing even for reverse taxiing to simplify otherwise tricky surface maneuvers. Cost to the owner will be about $335 additional (Seabee sells for $3,995).

★ ★ ★

Down to Earth

While factory estimates and uptown guesses continue to balloon, a lot of distributors and dealers who have to beat the bushes for business are revising downward their estimates of lightplane production during the first year of "postwar." Deliveries since V-J Day have been disappointing, and operators in numerous instances are showing losses month after month. While some forecasters are predicting 30,000 to 35,000 new planes this year, some dealers and distributors believe business will have to pick up considerably to sell 15,000 of the new planes. (Note: Sales of surplus aircraft as of November 30 increased the number of U. S. civil aircraft certificated on January 1, 1945, by 48 per cent—about 10,000 liaison models and primary trainers have been purchased.)

★ ★ ★

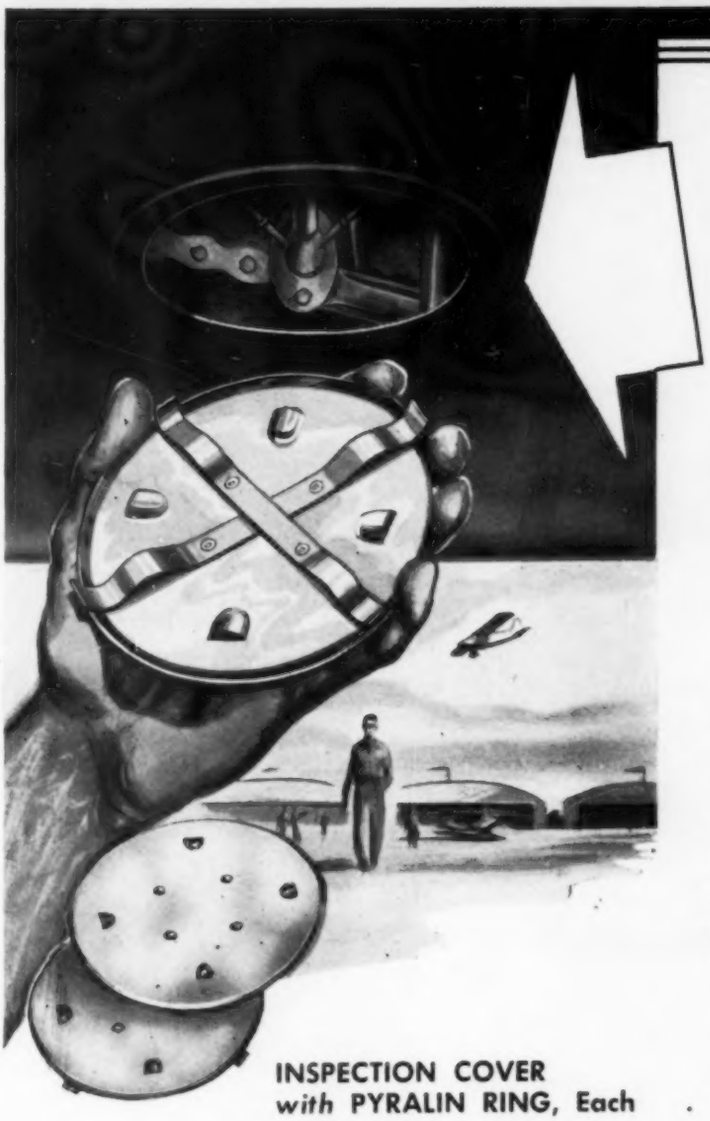
New Plans and Developments

That postwar "Mustang" you've been expecting North American Aviation to market may be announced soon. Seating four persons beneath an out-sized bubble canopy, it will probably have about 200 hp. and will be priced above $5,000. Incidentally, NAA and Lockheed are experimenting with the lightplane field from opposite directions—Lockheed engineers started with their single-seater Little Dipper with a view of working up to a four-place model, but North American apparently will test the four-place model first and go in for smaller versions later. . . . Stinson's newest design, the four-place pusher, may be ready sooner than expected. . . . Bendix is experimenting with a pusher closely resembling the 1947 Stinson. . . . When Republic's Seabee production and distribution gains headway, Alfred Marchev's engineers will have a landplane companion ready for the market—at an unprecedented low price. . . . Cessna will follow its two-place Models 120 and 140 with an all-metal four-place Airmaster design, due to make its public appearance during the summer. . . . Fairchild's M-84 "family" plane has been the subject of recent publicity, but it probably will never reach the market. Fact is that Fairchild has a newer and better four-place design in mind—the M-84 is mostly an experiment with PT-23 components and cabin styling. Incidentally, tooling by Texas Engineering for production in Dallas of Fairchild's F-24 is progressing rapidly and the first F-24 built in Dallas will probably fly in February or early March. . . . Among new lightplanes yet to be announced is a small company's impressive pioneering with a two-place low-wing powered by a 90-hp. Franklin mounted behind the cabin and driving a nose propeller by a long shaft, Bell Airacobra fashion. Exceptional performance will be claimed for it.

★ ★ ★

Surplus Aircraft Disposal

Look for a large number of North American AT-6's to be offered soon through surplus disposal. A base price will be established from bids obtained from early advertising, and the 650-hp. Pratt & Whitney trainers will probably be pegged at $4,000 to $5,000 each. . . . Dumping of



INSPECTION MADE EASY *with* HEATH INSPECTION COVERS

Save time the easy way with Heath Inspection Hole Covers. Just dope the Pyralin ring to the fabric and cut out the center hole. The durable rust proofed Heath Covers then slide easily on or off the hole for quick inspections of vital spots beneath the covering. Heavy duty double spring holds the cover flush and tight so it won't blow off.

INSPECTION COVER *with* PYRALIN RING, Each	$ .30
INSPECTION COVER *less* PYRALIN RING, Each	$ .25
SET OF 16 COVERS *with* PYRALIN RINGS	$4.75
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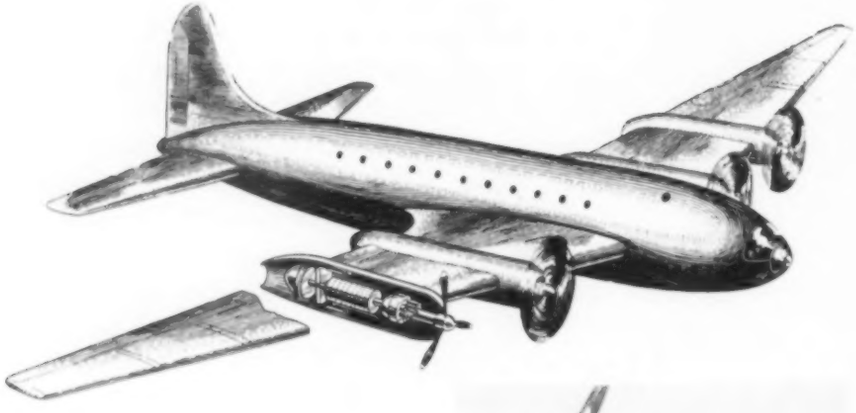
surplus BT-13's at a base price of $975 brought reports of volume sales. Surplus officials estimated about 300 were sold in the Southwest as of early January. Only about 100 had been sold from April through December 17 at price tags ranging from $3,650 to $4,000. . . . Same experience probably will be had with surplus AT-6's, which won't sell in large quantities until dumping prices are asked. . . . Several operators are eager to have a try at converting surplus Culver PQ-14 target ships, which they figure could be licensed without excessive work and costs to sell as single-seaters. The Culver is powered by a 150-hp. Franklin and will cruise at 160. Its landing speed is a shade hot, however, but probably can be reduced to about 50 mph. by reworking the flap travel. Several hundred of the PQ's are available which could be declared surplus and placed on the market.

★ ★ ★

Peacetime Horsepower for Reservists

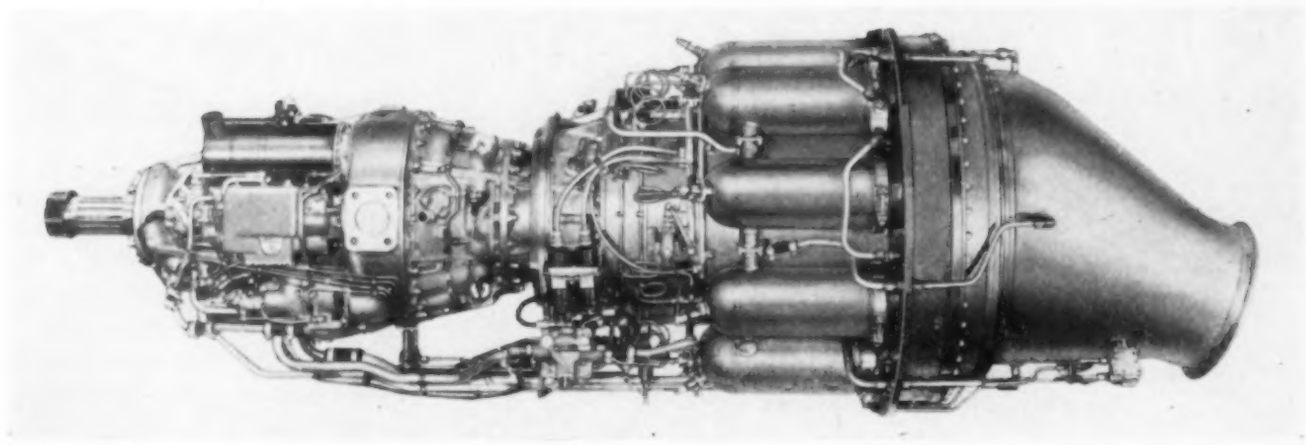
Both the Army and Navy are formulating comprehensive plans to maintain during peacetime the proficiency of war-trained pilots. Air reservists will be allowed to log a certain amount of flying in military planes, including tactical models, per month. Reserve commissions in the highest grade held at the time of separation are being offered honorably-separated Reserve-AUS pilot officers, who will probably total about 120,000. But the size and flight program of the AAF's civilian component will depend on appropriations allotted for postwar training. The Army has already ear-marked a large number of aircraft for reserve units. Selection of air installations for reserve pilots depends primarily on aircrew population density, the Army says, and those sections of the country in which most pilots and aircrew members will reside will provide logical and convenient sites for reserve bases. Reserve training will include extended active duty with the regular AAF, regular annual summer training periods, weekly progress periods of training, attendance at schools and extension courses. Reservists already separated from the AAF are clamoring for immediate flight time, but the AAF is delaying start of the program until theater occupational requirements are met and readjustments in manpower, aircraft, equipment and facilities are completed. Navy plans are under way but no details have been released.

PROPJET FOR LONG-RANGE TRANSPORT

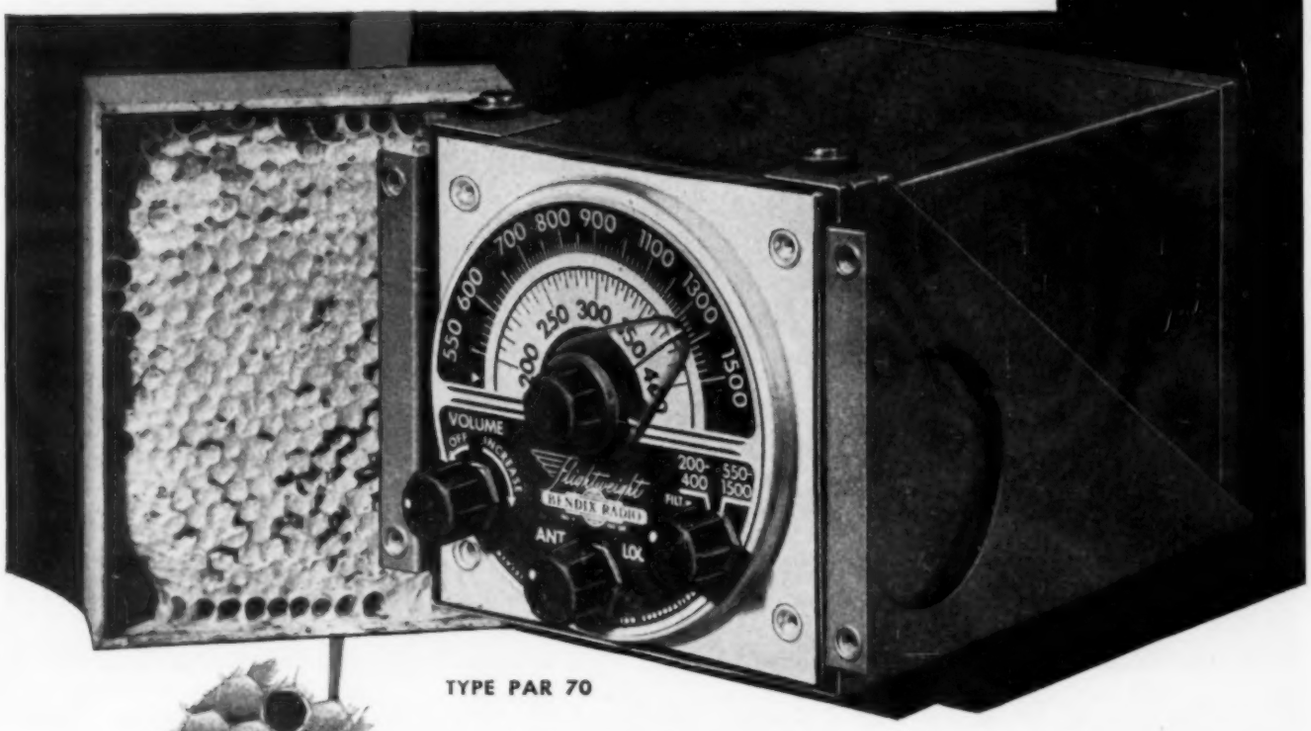


Turbine-propeller installation on a large transport is pictured above by a General Electric drawing. The small photo shows test-stand engineers at work on the Propjet at Schenectady, N. Y. A side view of the TG-100 powerplant (below) shows the large exhaust discharge, which delivers jet thrust to augment power transmitted through reduction gearing to the propeller shaft.

FLIGHT tests have been under way since last June with an experimental Army plane powered by a new combination of a gas turbine and propeller. Although details of the tests have not been divulged, General Electric, which developed the combination, says its TG-100 Propjet promises many advantages for large transports. Although the gas turbine uses more fuel than a reciprocating engine while cruising at slow speeds at low altitudes, its efficiency increases with speed and altitude and GE engineers claim the turb-prop combination offers much economy in transcontinental flights of large transports operating at high speeds. Whereas the reciprocating engine is most efficient at reduced cruising speeds below maximum power, the gas turbine functions most efficiently while producing full power over long distances. It is of smaller dimensions and much less weight than reciprocating engines, thus offering increased loads. In addition to its propeller thrust, the GE combination utilizes the turbine's jet thrust.



It's a HONEY!



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Weighing only 4½ pounds, complete with shock mount cradle, this unit **including power supply,** measures only $4\frac{5}{16}$ inches high by $5\frac{3}{16}$ inches wide by 7 inches deep and operates on a frequency range of 200-400 Kc and 550-1500 Kc.

Attractively finished in aluminum, maroon and metallic blue gray, this unit is a real "honey" in appearance and operation. So see Flightweight first! Ask your radio dealer about it or write direct to Bendix Radio Division, Personal Aviation Sales.

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The Bell helicopters, at present, are not being developed to replace the family flivver. They are designed for many practical commercial, industrial and military applications—for public service of a kind which only the helicopter can perform. And Bell Aircraft engineering is conclusive evidence that they incorporate the advanced thinking in design and workmanship which has won this company its reputation of being the *"Pacemaker of Aviation Progress."*

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PACEMAKER OF AVIATION PROGRESS

The Birdmen's Perch

By *Major Al Williams*, ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

JANUARY, EH?

Comes the resolutions!

Here's the Postwar line of completely remodeled Al-Flutter Prefabricated New Year Resolutions. Just check each box, tear out this section of the Perch, and paste it beside the throttle:

☐ **1. I will not make steep turns at low altitude.**

☐ **2. I will be kind to orphans, widows, and CAA Inspectors.**

☐ **3. I will be kind to my engine—by using Gulfpride Oil.**

☐ **4. I will always submit proof with my Little Known Facts About Well Known Planes.**

☐ **5. I will use Gulf Aviation Gasoline so that my putt-putt can "make like a pursuit plane."**

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Suppose you're doing an engine overhaul.

First, you take off the cowl, get the engine off, and *take it apart*. But you don't stop there. In fact, that's where you really begin. Because then you proceed with cleaning the engine . . . getting rid of any unsatisfactory parts . . . putting it back together again.

The steps followed in refining Gulfpride Oil are very much the same as those in an engine overhaul.

First, we get a top-quality crude. Then we *take it apart*—that is, refine it into lubricating oil (and all its by-products).

And right there is where Gulf's famous Alchlor Process really begins. For this

extra step cleans the already-refined lubricating oil, and gets rid of *more* of the unsatisfactory parts—the carbon-forming, sludge-making hydrocarbons.

And you have Gulfpride Oil!

Well—what are you waiting for? Get some!

LITTLE KNOWN FACTS DEPT.

Another month, and still no qualifier for our first Senior Perch Pilot's commission.

The field's still wide-open, and all it takes is 5 "Facts" that we can use—*with proof!* Meanwhile, you can still get a commission as Perch Pilot (bottom rung) with 1 "Fact."

Like these:

"No formation of American Air Force planes has ever been turned back from its objective by enemy action!"

That gets Anthony Kurriger, of Muscatine, Iowa, a commission.

And here's the kind of a deal we especially like. AMM3/c Robert L. Gray, Jr., VC 75, USS Ommaney Bay CVE 79, sent *two* "Facts" in the same letter—both good ones. So he is hereby commissioned and, what's more, has only 3 "Facts" to go for his promotion to Senior Perch Pilot.

1. "The TBF is the largest, single-engine, stick-flown aircraft in the world!"

2. "TBF's have been used for torpedoing, glide-bombing, skip-bombing, rocket-launching, and just plain scaring—and with one exception the TBF holds the record for the highest amount of enemy shipping destroyed!"

How about it—have you any Little Known Facts?

Send 'em in, then! Address above.

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Said a star in the strat-e-o-sphere,
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First, the rockets galore,
And now—planes by the score!
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If you can do better—DO . . . and send it in. T.W.T.

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There are over 500 Esso Aviation Dealers between Maine and Texas who stand ready to serve you with quality gasolines, rust preventives, and engine, hydraulic and instrument oils. The products they handle are backed by more than 40 years of continuous aviation experience and the most complete research organization in the petroleum industry.

Because of the know-how and experience that stand behind them *you can be sure Esso Aviation products are quality products.*

NOW AVAILABLE ... *Three brand-new Esso Aviation gasolines! Clear, unleaded 80 octane; improved grades 91 and 130 with reduced lead content and higher performance numbers.*

Logging The Coast

By.. Midge Winters

THE airport-to-hotel situation, created by the locations of airports outside the city limits, will be no problem at all in the future —thanks to the helicopter. At least these are the sentiments of Charles W. Gaskell, managing director of the Hilton Hotel. Long Beach, and James G. Ray, vic president of Southwest Airways.

Their views, and others, were discussed recently in a town hall aviation meeting held for the residents of "the Valley," (San Fernando Valley suburbs) who make up a great portion of the Los Angeles citizenry. Scene of the meeting was the high school auditorium of Van Nuys, prominent Valley suburb over which Actor Andy Devine reigns as mayor.

According to Gaskell, "it takes an airline passenger about as long to come from Los Angeles Municipal Airport to a Hollywood hotel as it does for him to fly here from San Francisco, but a helicopter taxi would take him to his hotel within 10 minutes of landing time."

Gaskell probably exaggerated a little here, since it takes exactly two hours for airline pilots to whisk San Francisco passengers to Los Angeles. And it takes genial Joe Ferrant's limousine only about 25 to 30 minutes to transport those passengers to the Hollywood-Roosevelt Hotel where good-natured Neuman Tucker (public relations) might escort them in with true Western hospitality.

Too, Mr. Gaskell overlooked Los Angeles' great plans for a freeway system, which will probably cut that 25-30 minute limousine time in half.

But in any event, no one can beat the hotelman's plans for saving airline passengers' time and inconvenience, for, according to Gaskell, the Long Beach hotel will install a 'copter landing elfid on the rooftop, with elevators running up and down to take air guests to their rooms.

We all will undoubtedly appreciate this service, but if this mechanical and air age keeps up, we wonder very seriously if our grandchildren will be born with any "pedal extremities" whatsoever! Of course, if they aren't necessary . . . However, feet have always seemed pretty nice to have around, and, like the late O. O. MacIntyre said, "anyone who can look at his feet without laughing has no sense of humor!"

Jim Ray took the floor to announce that his company plans to establish flying bus routes from a downtown Los Angeles helicopter airport to nearby communities and terminals. Some of the ships will carry cargo and mail, and others only passengers.

The "downtown airport" Ray probably meant was the Elysian Park site which has been the subject of much controversy—to be or not to be converted into an airport. It is obviously about Los Angeles' best and only bet for a downtown airstrip (unless it takes to the rooftops), and elaborate plans have been made for it, pending proper go-ahead signals.

Ray also pointed out to the Valley residents that the small communities should become active at once in preparing for airports and airstrips. Amen.

John E. Roberts, staff member of the Los Angeles Planning Commission, corroborated this last remark of Ray's pointing out that zoning community airports is a ticklish business. "People still aren't convinced that the air age is here, they protest whenever establishment of a new port is hinted," he said.

Roberts pointed out that Van Nuys is a typical example. A model airpark is planned at the present time for this area, but there is currently little hope of getting it because of adverse public opinion. This "adverse public opinion" is based on everything from the noise of ships (actually only about 70 decibles, or the equivalent of passing street traffic) to fears of rampant plane crashes in schoolyards.

Roberts might very easily have cited any of a dozen communities within the Los Angeles County area, which, despite housing the nucleus of aircraft manufacture, is proving to be the least aviation-minded of any populace in the nation.

The Regional Planning Commission's master plan of airports, which carpets the entire county with proposed airparks, secondary airports (for feeders, charters, etc.), and major terminals, has been brutally snubbed at every hearing by good citizens who are for an airport anywhere but in their own backyard. This line of thinking is akin to not wanting a community placed on a main U. S. highway or railroad network. And we've never heard of any community that passed these up.

An airport is just as valuable—or will be, if they ever get off the dime— as the auto and rail traffic arteries which put them on the communications map in the first place, but it looks as if it will take a major publicity campaign to make folks realize it.

★ ★ ★

Take-Off Time

Ted Smith, hardworking president of Aero Design and Engineering Corp., tells us that actual fabrication of the sleek, new twin-engined Aero Commander, executive type plane, is under way and that, barring complications, it will fly in March.

Following flight tests and CAA approval, the ship should begin coming off production lines late in the summer.

★ ★ ★

New Trimmings

Los Angeles Airport is expected to sprout four new buildings by April 1st, they say out Woody de Sylva's way (Woody being airport director). First building for which ground was broken was the American Airlines hangar, of brick construction. The other three buildings, being erected by the city, are the administration building, 126x180, which will house postoffice, cafe, and other concessions, and two buildings, 60x165, which will house passenger and baggage accommodations for two airlines each. ★★★

No Escape

Jack O'Brien, Los Angeles aviation cartoonist, called the other day to say that there is no escaping persistent advertisers—now they're using planes with loudspeakers. Said he was sitting peacefully in his own home (with the radio OFF) when a voice from "above" began spieling the wonders of some product. He rushed outside in time to see a single-engined plane whisk off blaring forth its message.

An Open Letter on Policy

Regarding KOLLSMAN Products and the new

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Instruments

Kollsman intends to continue the development and manufacture of instruments second to none in precision and reliability for the Military Forces and Airlines of the United States. This is the field where the ultimate is required, expected and demanded. We have the vision, the facilities and the staff to provide it.

This same Kollsman standard of quality guides us also in the manufacture of instruments for private aircraft. If personal airplanes are to be built and used in large numbers, and if the industry is to grow as it should — and as it can — certain quality standards must be maintained. The airplane is not the vehicle with which to experiment in order to determine how cheap an instrument one can get by with. An inaccurate or unreliable instrument is worse than none at all. Quality will never be subordinated to price in any Kollsman instrument.

Our new Scout line of instruments for personal airplanes — at prices well within the reach of the private flyer — was made possible by re-designing the standard airline and military instruments to the performance requirements of the private plane. Their ruggedness, accuracy and trustworthiness can be important aids to the safety and utility of private aircraft.

This, then, is our policy for the future in the manufacture of aircraft instruments. We believe it will contribute much to the healthy growth of the industry.

R. Carbonara

Vice President, Square D Company
General Manager, Kollsman Instrument Division

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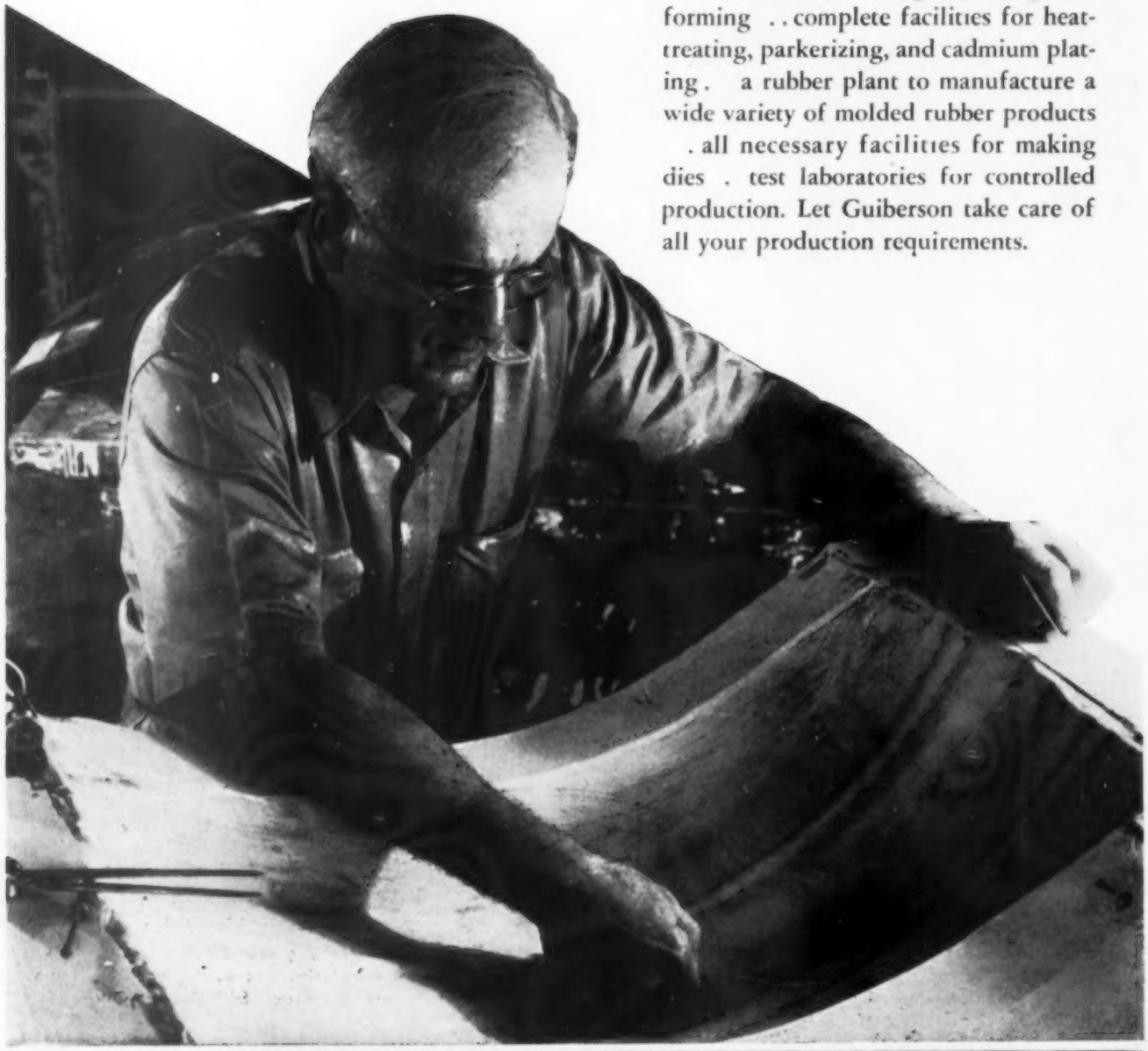

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SAFE THAN SORRY — GUIBERSON — BETTER BE

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Announces a New Division

The NORTHROP AERONAUTICAL INSTITUTE

dedicated to the training and advancement of men for careers in aviation

The entire aviation industry recognizes the critical shortage of aeronautical engineers, airline maintenance specialists, and expert master mechanics. Like other employers of aviation personnel, Northrop has found far too many of the present applicants for positions lacking in *over-all* aircraft knowledge. To handle a responsible job for civilian air lines, air bases, maintenance depots, or manufacturers, today's employee must have up-to-the-minute, comprehensive training in the handling of *all types* of civilian aircraft.

To meet this need, NORTHROP AERONAUTICAL INSTITUTE has been founded.

In this completely new school in the midst of the Northrop plant, students will learn the aviation craftsmanship of *today*—and *tomorrow*. They will be located on the Northrop mile-long air field, surrounded by intensely interesting research and development work—jet propulsion, gas-turbine aircraft engines, radar, and advanced airplane designs.

Through the new courses offered by Northrop Aeronautical Institute, students can obtain specialized education for important positions in postwar aviation. Every detail of every course is fitted to the new aviation requirements. Yet the Northrop training programs are already proved by the education of thousands of employees and Air Forces personnel.

Each Northrop student gets the benefit of completely modern technical information and educational methods, as well as extensive equipment for practical shop experience. Even the specially designed school buildings are new.

We believe that the Northrop Aeronautical Institute will provide aviation training that is unparalleled in its value both to students and to the aviation industry. It is our sincerest wish that in 1946 and following years, the name "Northrop Graduate" will be a synonym for a *versatile* and *valued expert* in the field of aviation.

Inquiries invited for classes now forming.

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Check one: Veteran☐ In Service☐ Civilian☐ SF-1

- ☐ Aeronautical Engineer
- ☐ Airline Maintenance Specialist
- ☐ Airplane Mechanic
- ☐ Engine Mechanic
- ☐ Master Airplane and Engine Mechanic (A & E)
- ☐ Home study course—Airplane and Engine Maintenance

ARMY'S NEWEST PHOTO SHIP is Republic XF-12, 400-mph. craft powered by Pratt & Whitney Wasp Major engines rated at 3,650-hp. each for combat. Almost the size of the B-29 but far more powerful, it has a 129-ft. 2-in. wingspan and a length of 98 feet 9 inches. Previous AAF photo ships have been modified fighters and bombers. A commercial transport version of the XF-12 is being developed and will be known as the Rainbow. Photos show XF-12 outside Republic's Long Island plant, with a P-47 and a Seabee amphibian posed alongside to illustrate its large dimensions.
—(Republic Aircraft Photos.)

REVVING UP

(Continued from page 4)

mittee composed of Mrs. Nancy Harkness Love, W. T. Piper, Casey Jones, Philip Hopkins, Dr. Bruce Uthus, Dr. Ben Wood and Dr. George Frazier. Stephens College founded its Department of Aviation in 1940 and annually enrolls about 800 women students in aviation. Flight training has become a regular part of the curriculum.

Two twin-engine Beechcraft transports have been bought by All American Aviation, Inc., for the inauguration of combination passenger and air pick-up service and to launch night pick-up schedules. They will be equipped with the firm's new air pick-up unit for mail and cargo, designed to pick up a 200-lb. deadweight as compared with the 60-lb. limit of the existing device installed on single-engine Stinsons. All American is also experimenting with a Noorduyn Norseman for pick-up, and has leased a surplus C-47, the latter to be used for glider pick-up.

Air power briefs: The Army's six-engine XB-36, nearing completion in the Consolidated Vultee factory in Fort Worth, won't be flown for some time, despite recent press reports of imminent testing. . . . Dr. Harold Roxbee Cox, chairman and manager of England's Power Jets, Ltd., and vice president of the Royal Aeronautical Society, says Germany's production of operational gas turbine aircraft was "well ahead" of that of the U. S. and Britain, but that the German turbines were so unreliable they would have been unacceptable to Allied Air Forces. He delivered the Ninth Wright Brothers Lecture last month in Washington under sponsorship of the Institute of Aeronautical Sciences. . . . The 45,000-ton USS Midway, the Navy's first super-carrier, has a complement of two squadrons of Chance Vought F4U-4 Corsair fighters, which have a top speed of more than 450 mph. . . . The AAF's "Azon" bomb is a 1,000-lb. missile with a million candlepower flare in its tail to mark its path so a bombardier can guide it, through a radio "brain" attached to the bomb, by remote control. . . . Between September, 1944, and January, 1945, six "Castor" missions were flown by the AAF in which B-17's, each loaded with eleven tons of explosives, were dumped against German submarine pens as "flying bombs," guided by radio from nearby mother ships. They were launched from England by pilots who bailed out over Britain. . . . Maj. Gen. Paul L. Williams, chief of the IX Troop Carried Command, says plans are under way for the entire U. S. Army to be carried by air within the next five years. ★ ★ ★

TWIN-ENGINE HIGH-WING EXECUTIVE TRANSPORTS are being constructed near Dallas by Southern Aircraft Corporation. Photo of first Southernaire, flight-tested in late December, shows its amphibian-like landing gear installation, with narrow tread, and retractable nose wheel. Priced at $35,000, the six-place craft is powered by two 200-hp. Ranger engines taken from the company's Grumman Widgeon, but production models will have 270-hp. Continental engines.

depends on

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The experience of Engineering Laboratories, Inc., in the manufacture of precision parts and equipment for peacetime and wartime aircraft inspires confidence as a source for quality products in scheduled quantities.

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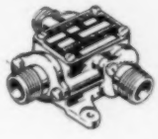
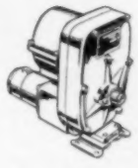
Southern
AIRCRAFT CORPORATION
PLANT IN GARLAND, DALLAS COUNTY, TEXAS

CONCENTRATED MIGHT!

the powerful action of weight and space saving

ECLIPSE LINEAR ACTUATORS

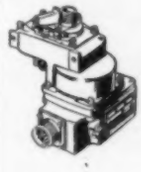




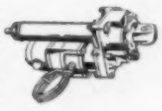
Eclipse Type 1601 Actuators utilize a central power unit to drive any combination of screw jacks through flexible shafts.

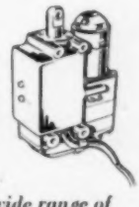
Designed by Eclipse, the leading name in aviation accessory development and production. As far back as 1931 we produced aviation rotary actuators for the planes of that era . . . and today for the fastest planes built.

Eclipse engineers can help you apply *concentrated might* to your new aircraft designs where weight, space and dependability are all important. Write today for installation drawings and performance curves.



Eclipse Type 1600 Actuators are available in pairs (left and right hand) for application where simultaneous movement of two elements is desired.





Eclipse Type 1602 Actuators are small screw-jack types with integral motors, gearboxes and limit switches.

These are only a few of the wide range of types and models produced by Eclipse.

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Air Shippers have their eyes on inland ports—the small cities with limited length runways.

Their interest turns naturally to the Fairchild "Packet."

For the "Packet"—expressing the painstaking research and precise engineering typical of *all* Fairchild operations and products—can:

GET IN, fully loaded with up to nine tons of flying freight, on average and less-than-average length runways.

UNLOAD AND LOAD, swiftly, with a minimum of manipulation. The "Packet's" split-tail doors at the rear open up the entire width of the boxcar-like fuselage. The forward cargo door permits quick access to "up front" freight. The "Packet's" horizontal cargo floor is at truck-floor height.

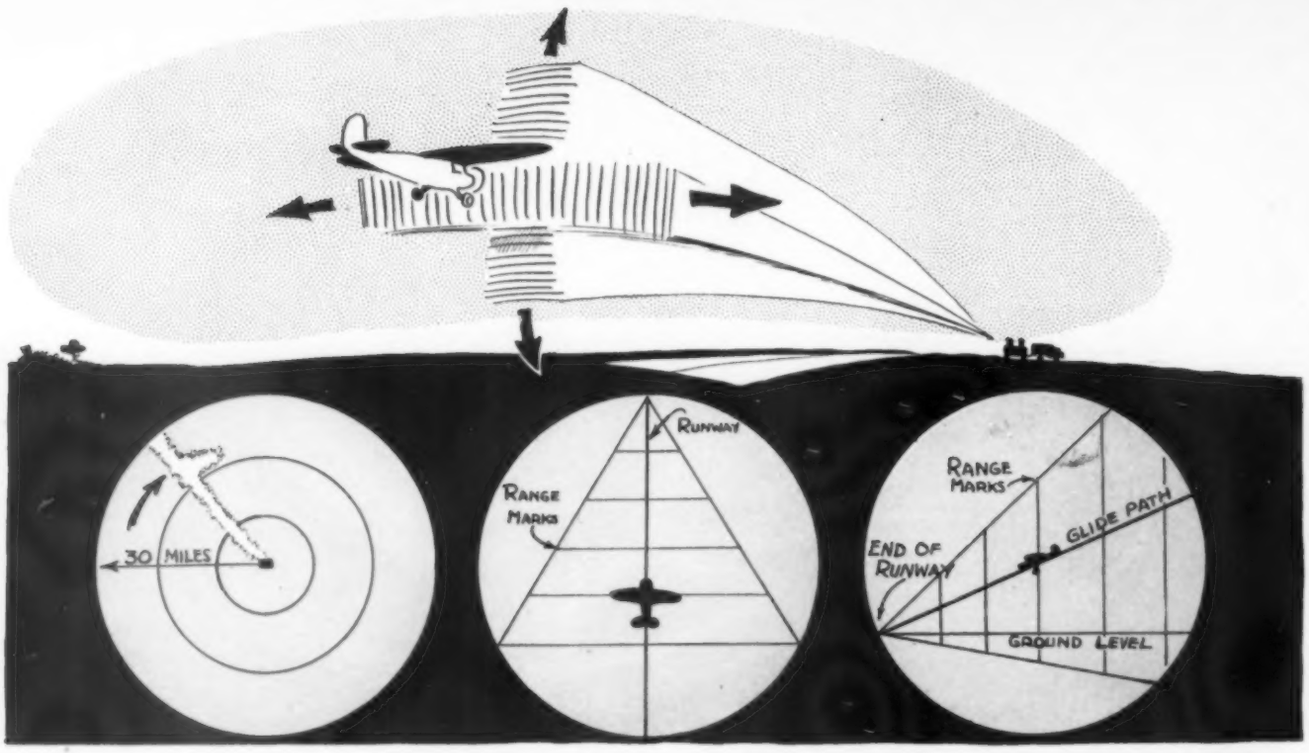
GET OUT, fully loaded, with a short run. It has take-off characteristics highly exceptional for a plane of its large cargo capacities.

All these characteristics are invaluable to the shippers seeking to tap the rich markets of the interior. They are characteristic of the "Packet" alone among cargo planes, because the "Packet," from its conception, was designed and built *specifically* to carry cargo—efficiently and economically—anywhere! They are the Fairchild "touch of tomorrow" in this plane of today!

Cargo operators—write for details about the "Packet."

Fairchild Aircraft

Division of Fairchild Engine & Airplane Corporation, Hagerstown, Maryland



A radar antenna transmits a signal and then "listens" for an echo—and it does this 2,000 times a second. Reflections picked up by the antenna are displayed on a scope—actually a high persistency cathode ray tube. GCA uses three such antennae which send out signals as indicated in the top sketch and echoes or "blips" are displayed on three scopes shown in the circles. The scope at the left displays pulses from the "search" antenna. This antenna sweep, indicated in the top sketch by the broad gray area, is shown on the scope as a line of light. Airplanes appear on the scope as "blips", or blobs of light. The center scope displays pulses from an antenna scanning a narrow area from left to right, the scope at the right displays pulses from an antenna scanning a narrow vertical area. Watching the "blip" move along these two scopes, the GCA controller issues instructions to bring the pilot down a glide path on a direct line with the runway.

Radar-Controlled Talk-Down Landings

Using two-way radio and war-tested radar, a GCA controller can land pilots in ceiling zero weather.

By JOE JAMES

THE Army staff car pulled to a stop near the East-West runway at Boca Raton Army Airfield. Directly ahead, and parked slightly to one side of the runway, was a strange vehicle. At first glance the mobile unit looked very much like an oversize house trailer with a Chic Sale unit on one roof corner and an oscillating barn door on the other.

"There's what you came to see," announced Captain D. F. Melone, supervisor of ground control approach training at Boca Raton, Florida. "That trailer houses our radar equipment. Give us a few minutes to get set up and we'll show you how 'ground controlled approach' works."

So this was the long-secret GCA mobile unit—one of the last radar developments of the war and one that may make closed-in airports a thing of the past. Officially known as ANMP-1, Army-Navy mobile radar navigation, the system literally "sees" through rain, fog, and snow. At Iwo Jima, when the ceiling came down, mobile units such as this brought Superforts right down on the airstrip. GCA, experts declare, can do much to remedy antiquated instrument approach systems. Caught by a sudden weather change, the commercial or private pilot without extensive radio range experience can be "talked in" with remarkable ease under conditions that would tax the skill of the most accomplished airline pilot. If the private or commercial pilot has a two-way radio, he doesn't have to know a "low cone" from a fan marker or a 90-degree orientation from a true fade. But he must be able to fly his plane without seeing the ground.

The Army airfield at Boca Raton, Florida, is one of the few places in the country where one can see GCA in operation. Long an AAF focal point for the collection, evaluation, and dissemination of radar information, the Army Air Forces Training Command has conducted intensive training courses at Boca Raton for GCA operators during the war. In addition, the training command trained operators for BTO (bombing through overcast); sea search, Loran (long range navigation), night fighter radar, tail

warning radar, radar altimeter, and IFF (friend or foe) maintenance.

Stepping into the trailer at Boca Raton was like walking in on a Buck Rogers movie set. Rows of transmitters and receivers lined the back wall. Radar scopes lined the wall facing the runway. Four operators sat ready and a fifth, the controller, stood by with microphone in hand.

GCA is a self-contained unit, Captain Melone explained. Power may be obtained from engine-driven generators carried on a truck or from commercial sources. For trailer-to-plane communications, twenty-one different communication channels are available, including three HF and three VHF. Two radar systems are provided. If one goes out, the controller can merely flick a switch and throw in the other system.

Three radar antennae are used in the GCA unit. One is an ordinary "search" antenna, which covers a thirty-mile range. The other two are "precision" antennae which cover only a very narrow "sweep" and thus provide great accuracy. These two precision antennae are used exclusively to give the pilot accurate verbal corrections as he descends along a predetermined glide path.

Key to GCA accuracy is the tie-in between the three radar scopes and the actual runway. The scopes are accurately scaled to show elevation and direction of flight. They are also calibrated to show the end of the runway

and a predetermined glide path that will clear all obstacles. All the controller has to do is watch the plane's "blip" move on the scopes and tell the pilot what corrections to make. If the plane is to the right of the runway, the blip will be to the right. If the plane is above a predetermined glide path, the blip will be above the line on the scope. It's as simple as that. Range lines tell how far the plane is from the runway and its altitude.

"Hello Sad Sack, Hello Sad Sack," the radio blared, "this is Army 052. Over."

Immediately all of the operators concentrated on their scopes and the controller, Sgt. N. J. Zoepfel of St. Louis, Mo., plugged in his mike and moved to the "search" radar scope. "Sad Sack," he explained, is the call for GCA at Boca Raton. "Hello Army 052," Zoepfel answered, "This is Sad Sack. We have you in sight. (He pointed to a blob of light moving slowly toward the edge of the "search" scope). Range is 15 miles, altitude 4,000 . . . maintain 4,000 . . . turn left to 090."

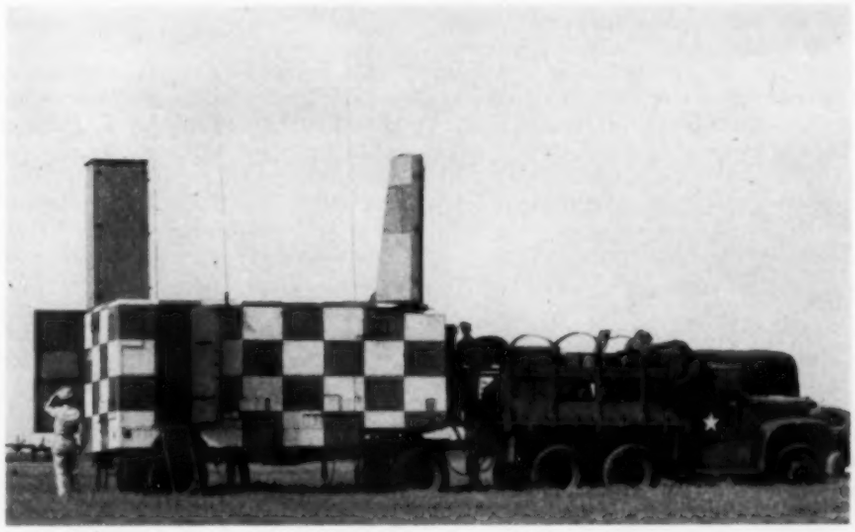
On the scope the blip changed direction, and slowly began moving back toward the center.

"Army 052, you're doing nicely," Zoepfel continued. "Now 10 miles out . . . course is to the left . . . " Zoepfel moved to the "precision" radar scopes, which show the blip movement in relation to the end of the runway and glide path. "Turn left to 085," the controller commanded. "De-

COMMERCIAL GCA READY—

The latest GCA modification, now in production, requires only one operator and, with this set, a CAA tower operator can see all traffic regardless of weather and handle several approaches at a time, according to Gilfillan Bros., Inc., producer of the military GCA set and now working with the CAA to design equipment for use on airports throughout the country.

In a recent test using dual runways, the modified GCA set handled landings at a rate of one every thirty seconds — or 120 an hour — Gilfillan revealed. Instrument approach systems now in use average six to seven minutes for fan marker approaches and twelve to fourteen minutes for a standard instrument approach.



After a test run, a "Texan" pulls up over the mobile radar unit parked near the upwind end of the runway. The two odd-shaped objects on the trailer roof are radar antennae. Power for the radar and radio equipment is supplied by generators carried on the truck. Built-in hydraulic jacks tilt the trailer two degrees toward the runway—necessary for proper radar coverage—and keep the trailer properly aligned on rough terrain.

scend to 1,000 feet . . . coming back toward course nicely, range is now 4 miles . . . altitude now is 1,000 feet . . . you're on course . . . hold 088 . . . now on glide path . . . establish 600 feet a minute rate of descent . . . air speed 130, gear down . . . range is now 3 miles . . . turn left to 086 . . . range is now 2½ miles . . . (the blip was now right on the line to the runway and slightly above the glide path line on the scope) . . . Full flaps, maintain descent . . . range now 1 mile . . . on course . . . fifteen feet above glide path . . . increase rate of descent to 700 feet a minute . . . still on course . . . hold your present altitude . . . range is ½ mile . . . still on course . . . start 500 feet a minute descent . . . range is ¼ mile, you're on course and glide path . . . hold rate of descent . . . turn left to 084 . . . you're doing fine . . . you're over the fence . . . the runway is 100 feet below you . . . keep coming . . . fifty feet high . . . twenty-five . . ."

"Contact with the runway," the pilot radioed, "the wheels are on! Nice work, Sad Sack."

"Can you bring any airplane in like that?" I asked, as the operators relaxed after the approach.

"We can if it has a half-way decent radio," Zoepfel declared. "Of course we have to vary the glide path for different planes, but that only takes a few minutes." A B-29, the Sergeant explained, requires a shallow glide path while a lightplane needs a steeper line of descent.

Great Accuracy

"And is this system as accurate as it seems to be?" I asked. "Just how did you co-ordinate these scopes with the runway?"

"By careful measurements," Captain Melone said. "We have this equipment set up so the line of approach on the actual scope terminates at the end of the runway. Likewise, this line on the elevation scope coincides with a predetermined glide path ending on the runway." He emphasized that constant checks are made to insure against installation error.

Four operators and a controller are required to handle stacking, selecting, and the final approach, Melone explained. Three operators could handle a single-plane approach. The operators who handled the approach for the writer's demonstration were trained at Boca Raton, Melone said. All but one were staff sergeants; men without any prewar technical training. Throughout the demonstration they operated smoothly and seemed extremely confident regarding accuracy of the GCA system. Operators who handled the GCA equipment were Lt. T. W. Elam, Willis, Texas; S/Sgt. G. W. Scott, Philadelphia, Pa.; S/Sgt. L. T. Altschul, Chicago, and S/Sgt. W. H. Lomax, Atlanta, Ga.

—(Air Force Photo.)

View inside the mobile radar unit at Boca Raton, Florida. Last radar scope in the row is the "search" scope, which covers a 30-mile area. The controller first picks up a plane on this scope and "talks" the pilot into position for a straight-in approach. Then the controller moves to the position he occupies in this picture. Microphone in hand, he watches the plane's "blip" on two precision radar scopes and issues directions that bring the pilot down a predetermined glide path to the runway.

The history of GCA goes back to 1941 when a group of scientists assembled by the National Defense Research Council conceived the idea of using radar for blind landings. They were searching for means to erase weather handicaps. In military operations, zero ceilings can be disastrous when air support is needed quickly. Some device for "seeing" through fog and rain would save many planes that otherwise would be abandoned; because the pilots could not bring them in.

War-Tested

GCA was long in the experimental stage and the first model, an experimental one, was sent to England in 1943 for operational tests. By the time the third modification of the set was ready, operational pilots had made more than 2,000 controlled approaches. An Army controller at an airport near Verdun, France, tells this: "One afternoon a transient B-26 very low on gas called in. He was lost. Conditions weren't very bad—800-ft. ceiling. But it was quite hilly around here. He was picked up by GCA, brought down on the shortest possible path so that when he broke out he was in a position to land, which he did. He had thirty gallons of gas left when he landed. As soon as he got out of the plane, he drove over to the trailer, rushed inside, threw his wallet, cigarettes, and change on the ledge and said, "take them, they're yours. Next time I come by here I'm bringing a case of Scotch if I can beg, buy, or scrounge it."

At Iwo Jima: ". . . it is certainly a great boost in morale to see the B-29's and fighters coming in on the glide-path when the weather is too soupy to see the airport. . . . In one particular day of bad weather they landed twenty B-29's while the rest of us stood around and sighed with relief each time a new safe landing was made."

From the European theater comes a hair-raising story: Two P-61's were returning through the soup from a mission. The pilot of the first, when asked at what altitude he broke through the overcast, replied: "I didn't —I just felt a strong bump and I was on the runway." When the second plane was brought in the visibility was so bad that the pilot couldn't see from one runway light to the next.

Potential Uses

After watching a GCA demonstration, the writer believes the system offers great possibilities. GCA should certainly be an invaluable supplement to radio range equipment, when ceilings suddenly go to the bottom over a large area and alternates close. As any experienced instrument pilot will testify, when you're over the range station you know exactly where you are; *but* when you chop back the power and start dropping down to a minimum approach altitude, you simply have to *time* the distance to the end of the runway. If you get off on either side of the beam, and visibility is poor, you may miss the field entirely. Or, if the ceiling is below minimum, you may fly right over the end of the runway and never know it. With GCA, an airliner could be safely and accurately lined up with the runway and then started on a glide path that would put it exactly over the end of the runway and *on* the runway if the pilot desires.

As for the personal plane owner and GCA, certain factors must be considered. In its present stage, GCA can bring in any pilot with a two-way radio and a knowledge of attitude instrument flying.

To follow a GCA controller's directions while flying in "soup," a pilot must be able to fly straight and level, make turns, climb, and descend—all without stalling or getting into a dangerous position. In other words, the pilot must know how to fly by "attitude" instruments. Learning to fly by "attitude" instruments is not as difficult or as costly as it seems. In the Navy course for pilots, cadets receive ten hours of attitude instrument training before they begin radio range work.

(Continued on page 46)

Cessna's new Model 120-140 series is a two-place, 85-hp. all-metal design featuring the company's spring steel landing gear. Wing is fabric covered, but control surfaces have metal skin. Demonstrators will reach dealers in March. Cessna's 4-place models will be marketed next summer.

—(Cessna Photo.)

Cessna's Contender

THE first two models of a postwar line of all-metal personal airplanes, both two-place, 85-hp. craft, have been announced by Cessna Aircraft Company, which plans to market two additional models, both four-place types, during the summer. All four planes are of high-wing design, resembling Luscombe's Silvaire in general appearance.

Models 120 and 140, first to reach the market, will sell for $2,495 and $2,995, respectively, while Models 170 and 190, to be announced later, are expected to be priced much higher.

Featuring the two-place Cessnas is a patented landing gear made of spring steel, the flexing of which absorbs both torsional and vertical shock. Cessna says tests show the new gear resists normal ground looping tendencies and offers much improvement in ground handling in cross winds. Each side is a thin, one-piece sheet of steel, having no moving parts.

Both the Model 120 and 140 are constructed of 24ST aluminum alloy sheet, except for the wing, which is fabric-covered. Model 140 is the de luxe version of the two, being equipped with manually-controlled flaps, starter, generator and battery, upholstered cabin with adjustable seats, large toe brake pedals, improved hydraulic brakes, steerable tail wheel and sound insulation. It has a twelve and one-half-gallon fuel tank in each wing.

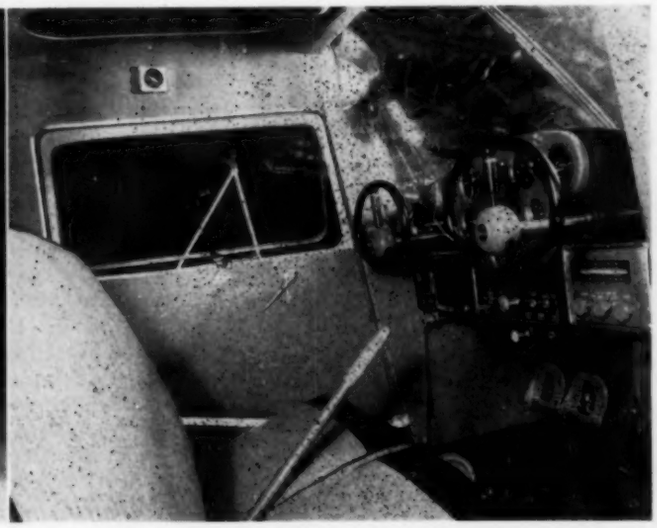
Model 120 is the same airplane but does not come equipped with starter, generator and flaps, and its cabin is less luxuriously appointed.

Performance data and specifications were not available, pending completion of ATC tests, but the company said the two-place models will cruise at "well over 100 mph." and have a range of four hours.

Cessna's personal planes before the war were well known for their efficiency, and the company emerged from an extensive war production program with one of the lightplane industry's most completely equipped metal-working plants. ★ ★ ★

Close-up photos show Cessna's thin steel landing gear and comfortable interior of Model 140, the picture at right emphasizing the flap control and full-size toe brake pedals.

—(Cessna Photos.)



JATO AND CIVIL AVIATION

Jet - assisted take - off, which worked wonders in war, offers possibilities to the private flier, sportsman glider pilot, and the commercial operator.

JATO, tested and proven in the crucible of war, is about to burst its rocket power into the peacetime skies. Glimpses of things to come in this field of jet-assisted take-off, given aviation writers of the West Coast recently by officials of the Aero-Jet Engineering Corporation of Pasadena, California, an affiliate of the General Tire and Rubber Company, left no doubt in the mind of anyone that jato is destined to become a great boon to the private flier, the sportsman glider pilot and to commercial aviation.

The company is testing and perfecting everything from an 85-pound jato unit that will take a glider up to 1,500 feet in a burst of 24 seconds, to units for commercial airliners and giant buzz-bombs. During the war AeroJet, the largest manufacturer of assisted take-off rockets in the world, built and delivered more than 50,000 jato units to the United States Navy. These were used by the Navy in Pacific waters and had sufficient thrust to enable the Navy to rescue men from right under the noses of the Japanese. A great majority of these rescues would have been impossible but for the use of jet-assisted take-off, an idea which originated in 1939 with General Henry H. Arnold, Chief of the Army Air Forces, and Dr. Theodore von Karman, director of the Guggenheim Aeronautical Laboratory at the California Institute of Technology.

After a two-year development program jato became a successful device and was ordered by the Navy in production quantities. All of the units were manufactured at the company's Propellant Plant in Azusa, California.

At the same time, the California Institute of Technology built and operated the Foothill Plant facilities for the Office of Scientific Research and Development. These facilities were devoted exclusively to research and production on rocket ordnance. Recently the Foothill Plant was transferred from the OSRD to the Navy and the production and service organization for these facilities is now operated by the General Tire and Rubber Company of California under contract to the Bureau of Ordnance. This arrangement makes a close bond between the jato, buzzbomb and other rocket development work now going on at General Tire and Rubber Company's Azusa affiliate, AeroJet's Propellant Plant, and the assembly of sample rockets at the Foothill Plant.

Many Commercial Possibilities

AeroJet is now in the process of getting jato certificated by the CAA for use on the Douglas DC-3. The Army has loaned the company a C-47, military version of the DC-3, upon which flight tests are being made. It is indicated already that jato will improve the take-off distance of the DC-3 at sea level under full load conditions by 35 per cent. If under certain conditions of weight and altitude a DC-3 would require 4,000 feet to take off and clear an obstacle, the same take-off and obstacle clearance could be made in 2,587 feet with jet assistance.

The installation of jato will allow take-offs not only from smaller airports but also from airports at higher altitudes than previously possible with the DC-3 and other types of aircraft which will use jato as soon as CAA approval is given. This is of great importance in Central and South America where operators are flying from skimpy airports hacked out of the jungle or which perch at altitudes above 10,000 feet. Many of these air strips must be two miles long and payloads are cut to one-half or one-third in order to get a plane air-borne in the thin atmosphere two miles above sea level.

In the words of E. E. Nelson, sales manager for AeroJet, any airplane regardless of size can take off with jet assistance from any field on which it is able to land. Use of jet-assisted take-off for lightplanes enables owners to take off from small airfields or emergency spots which are adequate for landing but not large enough for take-off with ordinary power. Furthermore, jet assistance makes it possible for the light amphibian or seaplane to take off from small lakes, high altitude lakes or other small bodies of water where ordinary engine power is insufficient for the take-off.

On a glider, the AeroJet motor becomes the power for the take-off, launching the glider in a few seconds to proper soaring altitudes from any convenient airport, and eliminating the necessity of using tow planes or tow cars or of assembling and dismantling,

and hauling, cumbersome launching devices.

Another important factor is that jato adds to the safety of taking off an airplane having a high wing loading. The critical instant between take-off speed and safe single engine speed, in case of failure of one engine, is covered by the burst of rocket power which would give the pilot sufficient power to gain altitude and remain airborne while he is engaged in fighting against the torque imposed by the sudden failure of one engine.

May Be Turned On and Off

The standard AeroJet solid propellant motor is a jet propulsion motor which generates a thrust of 1,000 pounds for 12 seconds—called "12 seconds of the most valuable time on earth." The weight of the standard unit is 205 pounds loaded and 105 pounds unloaded. Units of varying weights and sizes are being developed for airplanes of varying types and sizes, and for certain uses there will be jato units of liquid propellant nature which will give a sustained thrust well beyond 12 seconds. Some of these will give jet assistance for as long as 45 or 50 seconds. They may be turned on and off at will.

The mechanism by which the unit is attached to the airplane is simple and inexpensive and the weight added by such installations averages only about twenty pounds. It may be secured to any substantial member, either of the wings or fuselage. The unit may be reloaded by replacing the propellant charge with a new cartridge, which is inserted into the chamber after the jet motor has been reconditioned and checked.

The jet motor is installed in the supporting bracket with greater ease than a bomb is placed in the bombbay of an airplane. The motors require no servicing, as they are delivered ready for use. After take-off, the pilot may, if he chooses, drop the jato unit as he would a bomb and proceed on his way unhindered by the 105 pounds unloaded weight of the motor. The dropped motor may be salvaged by airport attendants and used later.

The operation of the unit is not affected by normal external temperatures and pressure conditions. A safety plug with a diaphram is provided in each unit as an added safety precaution against excessive pressure. Instruments are provided to show the pilot the amount of thrust that is being produced by the unit. One standard jato unit is equivalent to about 350 horsepower, and as many units may be used as are required, depending on size of the plane, the amount of load that is carried, length of runway, obstacles to be cleared, altitude, etc.

The jato units are not bulky. The motor, designed for the DC-3 type airplane, is 35 inches long, and those for lightplanes would be much smaller.

An example of how jet assistance helps you out of tight spots was the experience of Captain William Gore of the U. S. Marines in getting a Martin Mariner off shallow Ascarate Lake at El Paso. The Mariner seemed to be hopelessly bogged down after making an emergency landing. Pilots stationed in the area said it would be impossible to fly the boat out. They were for disassembling the ship and sending it piecemeal to the Pacific Coast for reassembly.

Captain Gore made some pretty heavy bets with some of the Army pilots that he could fly the plane off the lake. Then he attached four jatos to the fuselage of the plane, two on either side, just at the rear of the wing. With the 1,200 additional horsepower, Captain Gore was able to get the huge boat off the shallow puddle before he had crossed half its length. He set her down at San Diego and then sat back waiting for the money he had won. He didn't have to wait long. The popeyed Army pilots, still talking to themselves, paid up in a hurry. ★ ★ ★

These West Coast scientists are developing the commercial utility of rocket power. Leaders in war research, most of them are remaining for study of peacetime application of rocket power. Exploring numerous commercial possibilities for AeroJet Engineering Corporation, an affiliate of General Tire & Rubber Company, are, left to right: Standing, Dr. Norton B. Moore, Dr. A. L. Antonio, B. T. Morris, B. L. Dorman, Dr. Martin Summerfield, and R. B. Young. In the foreground, beside a solid fuel jato motor, are Dr. M. J. Zucrow, and Glenn Miller. Although active in war rocket development, Dr. Summerfield and Miller are not taking part in commercial development. In the lower photo, left to right, are Charles Frost, research engineer for General Tire, A. H. Rude, executive vice president of the Aerojet division, and Dan A. Kimball, vice president, Aerojet division.

Too Many Buzz-Bums!

Mayhem In The Air

More than half the serious and fatal airplane accidents in 1945 were caused by reckless flying. Better stifle that urge to give your friends a "buzz job."

By ROCKY BANCROFT
Air Safety Engineer
(Formerly Chief Accident Reports Editor, Civil Aeronautics Board, Safety Bureau)

DIVING! Zooming! Circling! Waving and calling to friends! Maybe that's just "buzzing" to the amateur pilot but it's "reckless flying" to the rest of us, and it heads the list of causes of the 1945 serious and fatal airplane accidents. It does not merely head the list, it is the primary cause of more than half of the total of serious and fatal accidents. And that isn't all.

There were the "less reckless" pilots in 1945 who flew into sour weather, as if they had never heard of the U. S. Weather Bureau. Some even took off in weather so bad that they got lost in the traffic pattern. Others took off knowingly with a delinquent engine. The little "reckless guys" satisfied their yen for adventure, by landing on everything except the airport. They didn't do so bad in *landing* on the small open fields but in attempting to take off, hundreds of airplanes were cracked up.

By and large, and specifically, the situation is definitely *unfunny — ungood — and unfair* — recklessness has tripled since 1942, it's giving aviation a black eye, it's helping to defeat the airport program. In fact, it's nothing short of mayhem to aviation's orderly development — according to Webster — to cause mutilation or loss, injure so as to impair power. It's doing that to the industry.

The following paragraphs present the accident situation as it looks to the writer after an intensive study of accidents and their causes.

Difficult to Compute

The term "accident rate" cannot be used in this or any other discussion of non-scheduled civilian flying for the simple reason there is no way of computing a rate. The Army can talk about its rate per 1,000 hours of flying and the airlines their fatalities per million passenger miles because they know exactly how many hours of flying was done during the given period. In non-scheduled flying we don't. The nearest we can arrive at a rate is by basing the frequencies on the total number of registered airplanes or pilots. This method has proved to be unsatisfactory because of the rapid change in registrations during the war period and would be less reliable for the same reason during the present expansion period.

Anyway, what difference does it make to anyone except the insurance company? Of course I, too, wouldn't object to my insurance rate being lowered. Even if the accident rate was definitely downward, as we believe it is, numbers of accidents will increase with the increase in flying volume. The number of accidents must be kept down as well as the rate, for the public is not likely to differentiate between the two. The important thing is prevention. Even the most accurate statistics won't prevent an accident. We need to know the causes of accidents and what specific precautions will eliminate those causes. Statistics merely indicate which are the isolated causes and which are the ones so prevalent as to warrant action first.

Airplane accidents may roughly be grouped into: Training accidents, pilot error accidents, mechanical failures in both engines and airplanes and ground accidents.

Training Accidents

Training accidents in general are the result of the student's deficiency in either technique or air judgment, neither of which he possesses at the beginning of his training. By the time he has soloed the instructor should have imparted enough of both to make him a safe pilot. Student accidents continue to manifest themselves in the same manner as heretofore, namely in overshooting, undershooting, bouncing and losing control, leveling off too high and dropping in, nosing over, ground looping, losing control in gusty wind and taxiing into things.

There is also a relatively large number of accidents occurring during dual instruction. The cause in these cases invariably is "instructor waited too long in taking over the controls." Apparently, instructors are not adhering to a closely controlled flight curriculum. Although numerically in 1945 the largest number of accidents occurred as usual in the training category, the proportion of training accidents to the whole is substantially smaller.

Pilot Error Accidents

Pilot error usually shows up either in poor "pilot technique" or in poor "pilot judgment." Definite new trends are observable in pilot judgment errors. They are:

Taking off from and landing on "open fields."

Taking off in or continuing into bad weather.

Attempting to taxi in high or gusty wind.

More than 600 accidents have occurred from "open field landings or take-offs" since the lifting of the restrictions against landing on other than designated fields. Most of the accidents occurred when an attempt was made to take off from an unsuitable field.

Increasingly large numbers of pilots are taking off into bad weather, or continuing into it instead of turning back when encountering unfavorable conditions. This trend can partially be explained by a large increase in charter flying.

The third trend which appears in the pilot error category of accidents concerns the use of lightplanes in gusty or strong winds. More pilots are now engaging in cross-country flying.

Pilot Attitude Accidents

Pilot attitude accidents are manifested in recklessness and carelessness. Recklessness, as stated in the introduction, was the primary cause of over half of the serious and fatal accidents

in 1945. These accidents were the result of:

1. Low flying in which the pilot hit some ground obstruction.
2. Low acrobatics in which there was insufficient room for the pullout or recovery.
3. Diving on persons or property during which high-speed stalls were induced in the pullups or the lack of sufficient rate of climb resulted in a collision with obstructions.
4. Zooming in which the airplane was stalled at the top of the zoom.
5. Circling during which critical altitude was lost as a result of an excessively loose turn or a stall was induced as the result of an excessively tight turn.
6. Waving and calling to a friend, in which the pilot was incapable of dividing his attention between the ground and his flying and mushed or slipped to the ground.

Accidents which stem from carelessness and which also appear to be on the increase are:

1. Allowing the engine to cool off excessively in the glide.
2. Failure to clear engine sufficiently in the glide.
3. Running out of fuel.
4. Getting lost.
5. Failure to lower landing gear.
6. Taxiing into other airplanes or objects.
7. Starting engine without a competent person at the controls or without chocks.
8. Allowing passenger to walk into propeller.

Engine stoppages run well above the 500 mark. They are usually due to pilot's failure to use enough throttle to keep the engine warm during the glide or failure to clear the carburetor. Improper adjustment of the idling system and improper use of the carburetor heat also contribute to engine stoppage.

Getting lost and running out of fuel on cross-country trips are causes which continue to increase in frequency as larger numbers of pilots engage in this type of flying.

The general tendency for beginning pilots not to take their flying seriously is shown in the large number of taxiing accidents caused by taxiing too fast. Starting accidents have been numerous. Sleeves catch on the throttle, the throttle creeps or jams, confusion of signals between the person in the cockpit and the person pulling the prop through, no person at the controls, failure to use chocks—these are the causes of a half-hundred starting accidents.

A dozen belly landings and a half dozen airplanes blown over by bomber prop wash also were the results of pilots' carelessness. Most difficult to understand is how forty or fifty pilots could carelessly allow their passengers to walk into revolving propellers. Two planes were struck by bullets, in which one pilot was wounded (better fly higher over that farm).

DIVING
'Buzzing' house, pilot strikes tree he failed to see.
ZOOMING
Pulls up into steep climb and stalls at top.
CIRCLING
Circling house, loses altitude and hits ground.
WAVING
Waves to girl friend; allows plane to stall.
SOUTHERN FLIGHT

THIS IS RECKLESS FLYING— HERE'S WHY:

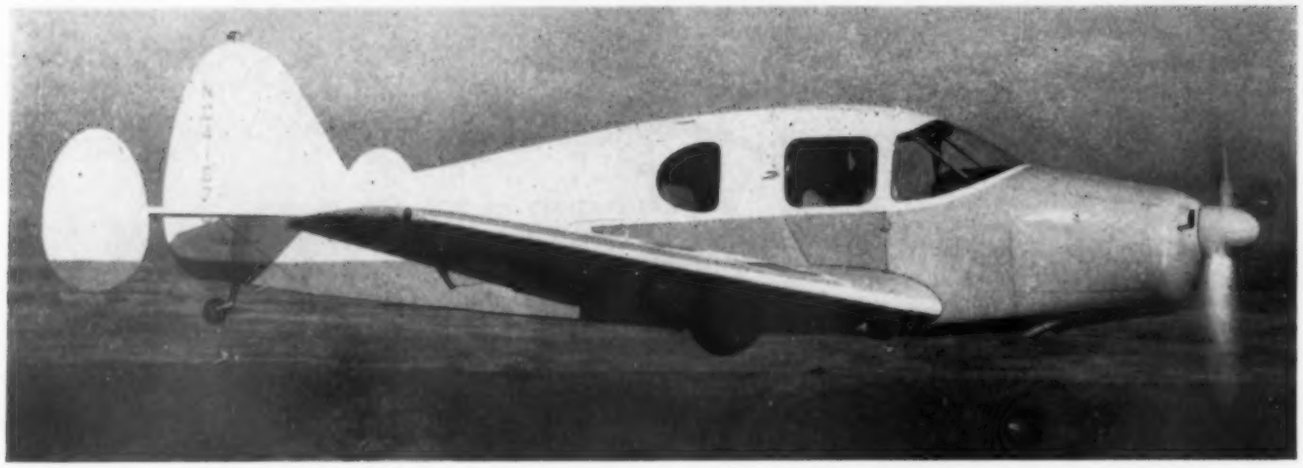
It requires comprehensive knowledge of flight factors involved—which you don't have.
It requires ability to divide attention—which you don't have.
It requires precision accuracy in judging distances—which you don't have.
It requires disregard for a reasonable margin of safety—THIS YOU MAY HAVE.

Ground Accidents

By comparison, the 500 crack-ups due to pilot judgment in using "open fields" is not so bad when there were at least 200 accidents which occurred because of the substandard conditions of airports. Unmarked holes, water pools, mud holes, high grass, posts, logs, stumps, unmarked ditches, soft snow, snowbanks, automobiles on runways, tractors, mowing machines, fuel trucks, and dogs, cattle and people being allowed to cross runways. These are not isolated cases but are the constantly recurring causes of airport accidents.

Not strictly airplane accidents but closely related are the numerous hangar

(Continued on page 45)



BELLANCA'S FOUR-PLACE 150-HP. CRUISAIR has been turning up some impressive performance in flight tests, reportedly cruising at 145 mph. with a 165 mph. top. Landing speed is 50 to 55 mph. The Franklin-powered Cruisair will be sold for $5,375 and equipment will include starter, generator, battery, position lights, dome light, molded Plexiglas windshield, built-in radio loop and hydraulic brakes. —(Hans Groenhoff Photo.)

Private Flying Roundup:

Conference Charts Needs For Aviation Expansion

The personal plane of today is as obsolete as a prewar fighter, and must be made safer and simpler.

The old conception of back-road locations for airparks must be changed, and new fields must be selected with "business value" in mind.

The trend to restriction of activities of private fliers at major airports, and that toward charging of landing fees for personal planes must be counteracted.

By BILL KEY

THESE were the three chief conclusions stemming from two days of discussion at the First Joint Private Flying Conference held recently in Washington, D. C., and sponsored by the National Aeronautic Association.

One notable point about the Conference was the new attitude taken by many speakers in relation to the Civil Aeronautics Administration. It stemmed from the activities of the Non-Scheduled Advisory Committee, and the consensus appeared to be that difficulties which have plagued relations between private fliers and the CAA are on the road to correction. It was emphasized, however, that private fliers who find old evils being perpetuated should take their case quickly to Regional Administrators and, if action is not forthcoming, to members of the committee.

Simpler, Cheaper Planes Coming

Woven into the pattern of the discussion was the feeling that manufacturers are faced with a demand for planes with greater inherent safety factors, simpler control systems and greater low-cost utility. The bellwether of this flock was William B. Stout, the designer, (which is hardly surprising), but he had ample support from both experienced and inexperienced aviation people among the eighty plus who attended. Stout, chairman of the conference, held the floor for more than an hour in expounding his view of the future pattern of private flying.

CAA regional administrators and advisory committee pledged to action in answering complaints from private fliers.

It is his view, he told the meeting, that we will not have private aviation of any proportions until "we have an airplane that fits the situation." The Ercoupe, he pointed out, is eight years old now and is only the forerunner of even more simplified ships. He foresaw a one-control plane, in which the wheel would control directional operation on the horizontal plane and a foot throttle would govern speed, climb or descent (more throttle to ascend, less to descend, median for cruise). It will have to be something small enough to drive home and park in your garage, and at the same time it will have to be more stable in the air—at least as smooth as a DC-3 at any rate.

Getting into some of the things now being done with a view toward getting the type of plane he envisages at a cost he feels feasible, Stout pointed out that advanced experimental work had already been completed on an almost complete wing assembly of plastic construction, that within two years a company, the name of which he could not divulge, plans to produce a 150-hp. engine to sell at a cost of $150. To do this, he said, an automobile engine

light enough to go into a plane with minor modifications will be produced to obtain needed basic mass production. The plane will be a two-seater, with a 22-foot wing span (dictated by garage size) and will weigh something like 650 pounds ready to go. Glass plastics are the answer to the weight factor, Stout asserted, having ten times the impact strength of steel although it is four times lighter.

He ventured a prediction on the size of the market: 1,000 personal planes for every plane flying today. But it will not be with the planes flying today or with anything faintly resembling them.

Distaff Views

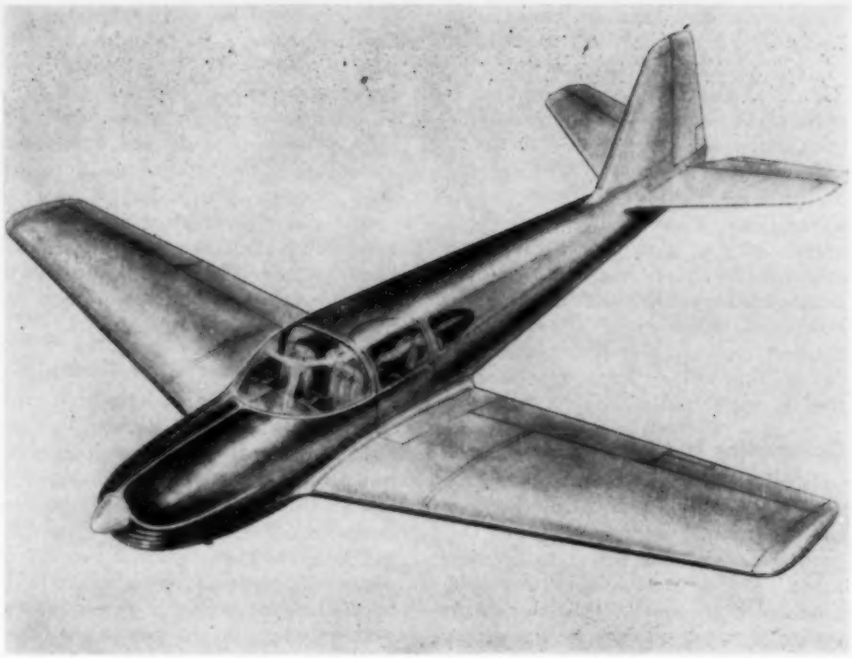
On the other side of the experience picture, a youthful and attractive editor of a woman's magazine, with forty-five hours in the air, gave virtually the same picture in outlining what she looked for in an airplane. She was Miss Elizabeth Gordon, editor of *House Beautiful*, widely known as a merchandising specialist. She wants simplified controls; streamlined ground courses that do not presuppose a technical background for the beginner pilot; planes that look "well-engineered," with "built-in intelligence," with instruments that parallel comparable instruments on automobiles (example: throttle); planes that are so designed in the cockpit and entry that women can wear their normal clothes without difficulty — and an end to female "tramps" around airports.

The psychology of selling "time" instead of selling airplanes is a mistake, she told the conference. The merchandising methods of other luxury sellers can very well be borrowed, in her viewpoint, and the pace-setters in every community must be made air-minded to create a mass market. Citing her own school as an example, she said that the ten women taking instructions with her had no community influence, and that until women with influence in the communities took up flying, the median families would not participate.

Surplus Instrument Proposal

Along somewhat similar lines, V. E. Carbonara, general manager of the Kollsman Instrument Division of the Square D Company, took plane designers to task for lack of attention to engineering in of instruments. The best arrangements have been decided, he said, and it only remains for the designers to engineer them in, leaving room for additional installations.

Carbonara made a strong plea for use of surplus instruments by the personal flier, made available at low cost through an agency arrangement by which the manufacturer tested and guaranteed each item until such time as demand makes possible low-cost production of new equipment.



FIRST PICTURE OF GLOBE'S 5-PLACE SWIFT shows speedy lines of all-metal low-wing. Work on it is well under way in the Fort Worth factory and it is expected to fly in April. The 5-place Swift will be powered by a 225-hp. engine, and will have a steerable nose wheel. Its cabin will have the roominess of a 1942 Buick sedanette, and the company expects a 165-mph. cruising speed, a 50-mph. landing speed, 1,300-ft. per min. rate of climb and 1,000-mile range.

Needs for Night Flying

Two other aspects of increasing utility of the personal plane came in for considerable discussion. The first was the question of night contact flight, with the concurrent need for lighting facilities at smaller fields, night-visible air-marking, thermal flashers for personal planes, and a reversal of a trend in regulatory agencies to regard night flight in the same category as instrument flight. The second was the development of GCA landing systems rather than the presently-projected CAA installations which require special installations within a plane. GCA would give the personal flier the

Wright Summarizes Progress

WITH personal flying leading the way, civil aviation has entered a period of tremendous expansion, T. P. Wright, CAA Administrator, declared in reviewing 1945 developments. To prove his statement, Wright quoted the following figures:

Student pilot certificates issued during 1945 totaled 70,000, compared to 51,000 for 1944 and 30,000 for 1939.

Manufacturers have orders for 40,000 personal planes.

Five hundred new transport planes, more than double the existing fleet, have been ordered by the airlines (7,700,000 passengers were carried by the airlines in 1945, compared to 4,668,000 in 1944 and 1,876,000 in 1939.)

The Federal Government is playing an important role in encouraging this over-all development, Wright declares. To encourage personal flying on a mass scale, the CAA:

Made it possible for any registered doctor to give a private pilot physical examination. Limited written exam requirements to air traffic rules and general operation.

Named assistants for Personal Flying Development in the regions and in Washington and appointed an industry advisory committee for non-scheduled flying.

Guided communities in establishing uniform air-marking to aid cross-country fliers.

Furnished technical guidance for aviation courses introduced in elementary and high schools.

Tested surplus military transports and conducted numerous "proving runs" over newly-authorized transoceanic routes.

same service that transport planes could obtain if it is used instead, pointed out Lt. Col. C. B. Sproul, chief of the Technical Division for Flight Operations, AAF, with only a normal radio installation necessary.

It was suggested that night lighting of small fields could be done inexpensively through use of flare pots placed every 200 feet along a runway, with others for boundary markers. A lighted tetrahedron would also be needed. Luminous paint, both for runway markers and for airmarkers, has been found impractical, those at the conference were told.

Community Initiative for Airparks

Chief proponent of the location aspect was progressive E. V. Fryhoff, of the Aviation Division, Missouri Department of Resources and Development. Fryhoff's activities have been directed to the small fields, and in the course of fifteen months he was driven 35,000 miles reaching small towns anxious to develop their aviation facilities.

Missouri recommends that airparks be situated near town along a main highway, so that airpark services can be combined with road services, such as tourist camps, filling stations, restaurants and other stores—providing dual income to operators, permitting longer hours of operation and tending to stabilize income at the airpark.

Aviation, Fryhoff said he is convinced, must be put on its own feet in the smaller communities, without "looking for a handout every time the grass has to be mowed, a light bulb replaced or a runway resurfaced." And while the intangible benefits angle can be overworked, he said he felt the airport will have to be paid for and one way to make it pay its own way is to concentrate other business activities to balance its contribution.

Questioned as to the best way to set up airpark committees, Fryhoff replied that Missouri had found it best to choose a cross-section of the town regardless of immediate interest in aviation, getting all hands joined until there isn't anybody of any weight left to fight against the project.

State Commission Goals

Some other aspects of the state programs, outlined by Clarence F. Cornish, director of the Indiana Aeronautics Commission, were developed in a new five-point plan his state is putting into effect.

Under the Indiana law, a broad program is permitted, with latitude to take stringent action if necessary, but with no intent on the part of the Commission to so do, Cornish said. Air safety will be up to the pilots, and the state will act only if federal agencies do not take appropriate action, he said.

The sole goal will not be numbers of airports or airparks, he told the Conference, but hospitality and good housekeeping will be emphasized, with chief attention given by the Commission to Class 1 and 2 fields. By state law, towns of 500 or more population are required to display airmarkers, and this program should be completed by next summer. Certificates will be given airparks and airports which voluntarily meet standards set for cleanliness, and it will be made advantageous for operators to do so voluntarily, he hinted. "We'll have to clean up, polish up and put out the welcome mat," as he put it, with first aid, fire prevention and fire fighting high on the basic program.

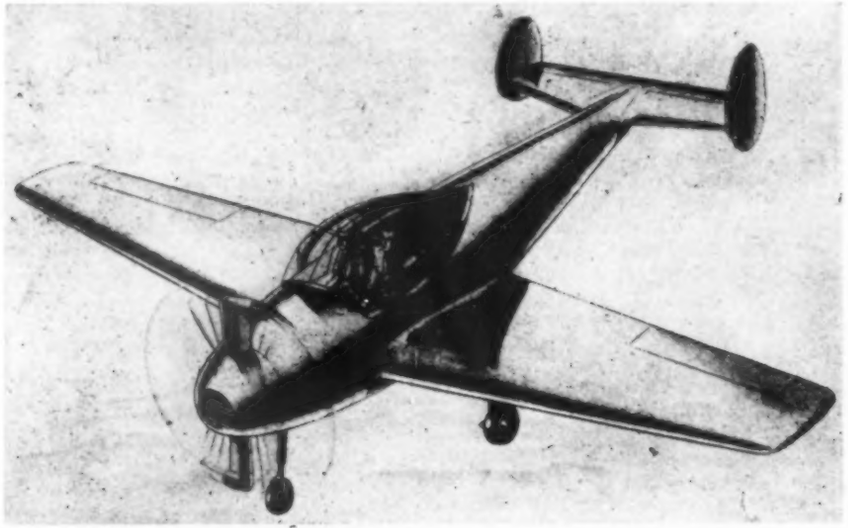
CAA Solicits Complaints

One speaker did tee off on the CAA. He was James W. Batchelor, general counsel of the United Pilots and Mechanics Association, Washington. The new rules are not the answer, Batchelor asserted, but are only the beginning, advocating return to the states of enforcement of safety regulations, zoning restrictions and other controls. Private pilots and students are given different treatment by inspectors because they aren't being hurt economically by suspension or revocations, Batchelor charged, and are at the mercy of inspectors. Again in his bill of particulars, he claimed that pilots are not given an opportunity to mitigate CAA action when they waive hearings; that civil penalties are becoming a "racket" and have "degenerated into a legalized form of extortion"; and that Washington has little control over Regional Administrators.

CAA's answer came from George Burgess, who pointed out to the session that the CAA is working to take the federal-state question out of the field of controversy into that of collaboration, and that CAA hoped the controversy over the private flier is ending with co-operation between the Non-Scheduled Advisory Committee and CAA. Arthur I. Boreman of Des Moines, first vice president of NAA and a member of the Advisory Committee, maintained that some early difficulties had been ironed out, and that co-operation between the committee and CAA was beginning to produce results. He advocated that private fliers take their difficulties to Regional Administrators, and subsequently to Committee members if action was not forth-coming. Boreman cited several instances in which he had been able to work out difficulties in that manner.

The old problem of uniform rules for regulation of aviation by states came in for considerable discussion, the consensus being that the widest latitude should be allowed state commissions so as to permit them to meet changing conditions and federal rules.

The problem of landing charges for private planes at airports built with public funds was also discussed at some length with the Westchester (N. Y.) airport, operated under lease by an oil company, coming in for the chief burden of complaint. Private fliers are being charged $1 per landing at that field, and it was reported that other nearby fields are now following suit. ★ ★ ★



JET-DRIVEN PROPELLER FOR LIGHTPLANES is being tested on models by engineers of the National Advisory Committee for Aeronautics in Cleveland. Several types of jet engines are being considered, including ram jets located on the blade tips and small combustion chambers located in the blade near the tips, using the centrifugal action of the propeller to compress air drawn in around the hub. In all cases exhaust thrust of gases discharged through the tips would provide the power.
—(NACA Drawing.)

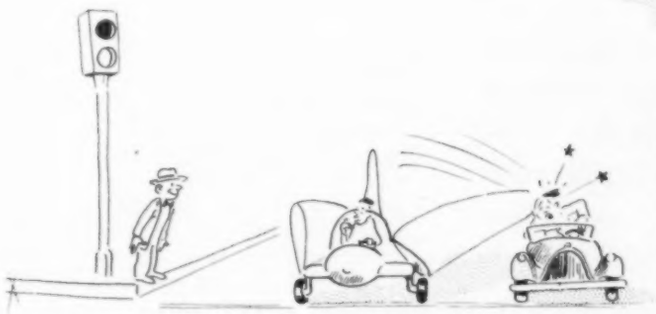
Design For Duffies

WITH all sorts of airplanes hitting the market daily, we have become quite interested in the attempts to dream up an airplane that will fit every need of the man on the street. Naturally, we were delighted when Wilbur Worblesheimer, brilliant young designer for the Apex Combine & Harvester Company, dropped in to show us the "Worblesheimer Wunabout"— a unique airplane that goes anywhere and does anything.

"We have to give the Duffy an airplane he and his kind, including the wife and kids, can use," Worblesheimer growled. "There are more Duffies than you think and they want more than jet propulsion, roadable helicopters, and submersible amphibians. The Wunabout has everything." The name "Wunabout," Worblesheimer revealed, was accidentally coined by his assembly line manager, who said he expects to build "one about every six months."

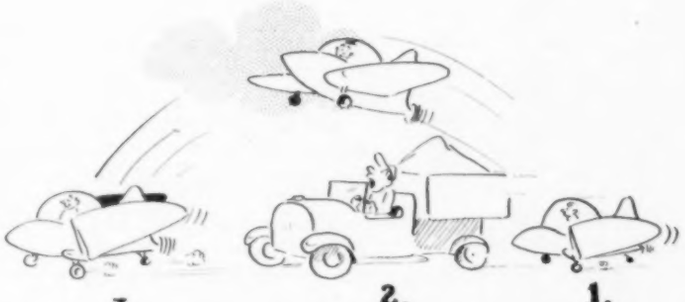
Here's Wilbur Worblesheimer with his Wunabout. At the right, he shows how the Wunabout, with wings removed (and they slip right off), will make an excellent sailboat. The engine would be either air or water-cooled, which makes boating simple.

The blister, when zipped off the cozy cockpit, would make an excellent skiff for duck hunting. Its transparency blends with water or grass.



With wings neatly folded, the Wunabout would be a natural for Sunday motoring. And, should other drivers give you any lip, a mere push of the unfold button will deal a nasty lick.

Worblesheimer shows how to use the Wunabout on picnics. The wings provide shade, the engine keeps you cool, and the tires are floats for the kiddies.



Road hogs will be no problem to the man who drives the Worblesheimer Wunabout. Just push a button, the wings snap in place, and the Wunabout will leap frog.

Brilliant designer that he is, Worblesheimer has one problem that completely baffles him. He says the problem is still unsolved. In spite of its many uses, the Wunabout SIMPLY WILL NOT FLY.

On take-off, the Howard DGA handles nicely with quarter-flap and a little nose-down tab. Landing approaches should be made with quarter-flap and at not more than 90 mph. Stabilizer should be full tail-heavy. The soft landing gear, the author warns, is likely to give you some false illusions.

FLYING THE HOWARD

While not a student's airplane, the Howard can't be beat for economy, comfort, and cruising range, says this veteran pilot.

By A. H. KNOUFF

COMMERCIAL operators and private pilots who have been waiting to pounce on the Navy's version of Benny Howard's DGA (said to stand for "damn good airplane") when it became available as surplus, may be disappointed when they get it —unless they are prepared for and understand its peculiarities. There are quite a few of us who will admit that we like this airplane because it is ready to go on a few minutes' notice; you don't have to dress like a deep sea diver to fly it; it is comfortable to ride in; it will stay in the air longer than you care to sit; and once you get the hang of it, you can get it in and out of small fields and will not worry about cross-winds, tail-winds, or gusts.

You should know that there are four varieties of this model which may be available. The GH-1 is little different from the prewar model except for the soft landing gear, steerable tailwheel, and GI finish (more about these later). Of course, this is the oldest of the four and should be carefully inspected accordingly. On the other hand, it might be the easiest to re-license. The NH-1 was modified for instrument training. It has three complete sets of controls and essential engine and flight instruments, one of which serves the left rear seat so that the instrument student could sit back there surrounded by silk curtains while the pilot had unobstructed vision in front. There are three separate radio receivers and one or more transmitters with a complicated system of switches so that the pilot and co-pilot can talk to each other or can transmit without disturbing the student's attempts to ride the beam or take a fix. The student can cut in to ask the instructor a question or vice versa.

Naturally the weight of all this extra equipment did not do the airplane's performance any good. Yet, I once took off from El Paso (4,000 ft. above sea level) with three people and about 250 lbs. of gear aboard. It may have been a triumph of mind over matter. About the best indicated speed you can hope for out of this model is 135 mph. This may be a shock to those who remember that the prewar NC-licensed Howard was credited with at least 160, but remember that the commercial version had a slick hand-rubbed finish and a lighter load. I imagine that the job of removing the excess equipment to re-modify this model for the CAA would be quite a problem.

On the credit side, it should be noted that the NH-1 carries 152 gallons of fuel and burns only 23 gallons per hour at 26 inches and 1,850 rpm. At an average ground speed of 120 miles an hour this gives you a range of nearly 700 miles with a safe fuel reserve. This is as good as an airplane averaging 148 mph. ground speed which might have to stop an hour to refuel and would burn about twice as much gas.

The GH-2 is the hospital-ship version carrying two stretchers, which was named the "Nightingale." It is a little faster, lighter and better balanced than the NH-1, but carries only 125 gallons of fuel. It has a removable seat which can be installed when the ambulance installation is not in use, making it a 4-place model. Without the stretchers, the speed of the GH-2 may be five or six miles faster than the NH-1. It should be easily licens-

able and, for the operator, offer an added source of revenue as an ambulance.

The GH-3 is my favorite. It started out to be an NH-1, but because the electrical equipment was not available at the time the contract expired, it was completed without the instrument training equipment or the hospital equipment, and was designated the GH-3. It retains the 152-gallon fuel tanks of the NH-1, and cruises at an indicated 145 to 150 mph. This puts the cruising range well over 700 miles. An airplane which had to stop for fuel would have to make a ground speed of 155 mph. to beat this.

It has been my experience that the overall average ground speed in any airplane over a period of years will be roughly 15 per cent less than the normal indicated cruising speed of the airplane. Thus to consistently average 155 mph. ground speed, you would have to have an airplane that would cruise at an indicated speed of 180 to 185 mph. Aircraft which will do this are beyond the pale of economy for the majority of owners and operators.

There is another item you should check, if you are buying a surplus Howard. Although all of them were powered with the Pratt & Whitney Wasp, Jr., not all of these engines were built by Pratt & Whitney. In spite of the fact that all of them were built to identical specifications, these built by the original manufacturer run cooler and give slightly better performance.

The first surprise in store for the pilot who flew the Howard before the war is the soft landing gear. I remember that the principal criticism of the prewar model was that the landing gear was so stiff that the slightest bump in the runway made the airplane hard to manage. Brother, you should find out what the soft landing gear does. You can't tell when it is on the ground. If you hit on the wheels first, it feels like the resulting bounce is going to leave you twenty feet in the air with no flying speed. You relax on the elevator to prevent a stall and the landing gear squashes and expands, making you think you have bounced again. Perhaps a wing starts down and you think it has stalled out. You kick opposite rudder and the steerable tailwheel throws the tail around so sharply that you get into a groundloop or at least the moment caused by centrifugal force causes the wing to hit the ground.

Easy If You Relax

Sounds terrible, doesn't it? Many pilots have never gotten over the scare they got the first time they landed the Howard, and consequently aggravated the possibility of trouble by tensing up every time they landed. Actually, if you had done nothing at all about the dropping wing, you would be better off. The spongy landing gear creates a false impression of what is happening, and if you let that illusion fool you, you are more likely to do the wrong thing than the right.

Like the old Howards, the war model has good aileron control, and even after it is on the ground the aileron can be used to pick up a low wing, but usually it will come up of its own accord if you devote your attention to keeping the airplane straight. You may recall that the rudder control of the Howard became very sloppy in a 3-point landing. The prewar type had a locking tailwheel to help keep the empennage behind you. The Navy Howards have steerable tailwheels connected directly to the rudder by cables —no springs or shock-cord—which produce immediate results when a pedal is pushed. The sudden increase in effectiveness of pedal movement when the tailwheel hits the ground has caused many pilots to throw themselves into a ground loop. Likewise when making a cross-wind landing, holding rudder away from the wind cocks the tailwheel to the side more than is necessary after it is on the ground, causing a ground-loop or, possibly, pulling the tailwheel assembly out.

Helpful Hints

To eliminate such troubles, I often take my feet completely off the rudder pedals just before the tailwheel touches. Other pilots make it a practice to *unlock* the tailwheel when approaching for a landing. This reversal of the usual procedure is better understood when it is known that the main reason for the steerable tailwheel feature on the Howard is not to facilitate ground handling, but to keep the tailwheel streamlined in the air. If left free, the tailwheel will not streamline itself and plays hell with the rigging. On the other hand—in spite of the apparently sloppy rudder at low speeds—the Howard is easier to handle on landing with the tailwheel free than steerable. I have landed without difficulty on a runway which was covered with a smooth sheet of ice—so that neither steerable tailwheel nor brakes could help without getting into difficulty.

The runways at the Howard factory in St. Charles consisted of two 1,500-foot runways, which should dispose of the fiction that the Howard needs a lot of room. The experienced GH pilot needs less than half of that to land, in a pinch. The factory pilots often landed on the sod, which was anything but smooth, when doing so would bring them closer to the part of the factory where they wanted to be.

When the take-off is made without flaps the run is rather long and the wings feel wobbly during the climb. This becomes especially unpleasant if you happen to hit the wash from another plane. Ben Palmquist, test pilot for Howard, uses about one-quarter flap on take-offs. This improves the angle of climb and makes the ship feel more solid in the air.

Climbs at 100

For take-off, the stabilizer may be set at zero, or a little nose down if heavily loaded. There is no rudder tab, and the effect of torque may be quite noticeable at the start of the run. At this point the steerable tailwheel can be helpful if you don't try to force the tail up. If the ship does not fly itself off by the time your speed hits 90 mph., help it out with a little back pressure. I usually climb at about 100, although other pilots prefer 90. I like to have a little extra when I hit a gust.

In approaching the field to land I slow down to about 110 mph. and put on about one-quarter flap. This reduces the amount of bank needed in the approach turns and helps the visibility. At best the visibility in the approach is not good. The wing blocks out the entire field during the turns to such an extent that you have to plan your approach carefully on the downwind leg, and execute it with a sense of timing and direction. I once straightened out on a final approach with a feeling that something was wrong. The tower soon told me. I had rolled out too soon and was about to land on the wrong runway.

Because the factory recommends a fast approach with a flare-out close to the ground many pilots bring the Howard in too fast. The excessive float that results makes the job of landing harder than it should be. The final approach should not be more than 90 mph. with half flaps and you don't need to be afraid to slow down to 80. The stabilizer should be set full tail-heavy. The main reason for recommending a flare-out close to the ground is to have enough speed to get the tail down. About the worst that is likely to happen, if you come in too slow or flare out too high, is that the nose will drop and you will make a rather hard wheel landing. The Howard's normal reaction in a stall is a clean drop of the nose.

Don't let anyone tell you that you can't make a wheel landing in this airplane. Although a 3-point landing is normally preferable, you can make wheel landings when conditions warrant. When you do, bring the plane

(Continued on page 46)

Compact arrangement of Aeronca factory at Middletown, Ohio, centers around the 1,275-ft. powered conveyor shown at left carrying fuselage structures from the welding department to the covering department (right). Fuselages are mounted on trunnions permitting full rotation. Hand-operated monorail conveyor feeds components into dope room.

—(Aeronca Photos.)

35 Aeroncas Daily From Mechanized Lines

Discarding prewar production techniques to incorporate new methods perfected during the war, Aeronca builds better airplanes faster.

NEW quantity production methods utilizing six conveyor lines, perfected after intensive reconversion study, have developed important advances in lightplane manufacturing for Aeronca Aircraft Corporation. V. C. Baltz, superintendent of the Aeronca factory at Middletown, Ohio, says some of the advantages of the company's production methods include: (1) With constantly-moving conveyors, it is necessary to have details and parts that are interchangeable and fit each and every assembly in the same manner—this is important to the man in the field with respect to maintenance and supplying service parts that fit; (2) the system lends itself to good inspection inasmuch as flaws in parts and assembly can be easily detected; (3) by teaching the worker to do one job and do it well, the system produces airplanes that are consistent and uniform in their assembly; and (4) well designed pieces in large production runs makes possible interchangeability of parts in different models—this is helpful to the man in the field who can stock many different assemblies because one part, in many cases, is either right or left and is definitely interchangeable in several models.

Aeronca has been producing twenty airplanes daily, but latest expansion plans call for an increase of this capacity to thirty-five planes daily. The present production model is the tandem two-place Champion, to be followed shortly by the side-by-side two-place Chief and later by the two-place Chum, two-control low-wing with tricycle landing gear.

Soon to be enlarged is Aeronca's 1,275-ft. floor-type powered conveyor which is timed to produce twenty complete airplanes daily. Forty-five fuselages are carried in a continuous line. A second powered conveyc feeds twenty-five pairs of wings into final assembly.

Fuselage Line

The No. 1 conveyor begins in the welding department and runs 260 feet in a straight line through the covering operation. This line parallels the plant's east wall, allowing a compact arrangement of racks, work tables, subassembly jigs, material stands and work space. Complete freedom of movement for workers is necessary, as the conveyor is always slowly but steadily moving towards final assembly. Welded sub-assemblies are inspected by a roving floor inspector, periodic checks are made with checking fixtures, and the first inspection station is installed in the line after the first three welding stations. The second inspection station has been inserted following the fuselage frame priming operation, which has one station for fairing and three stations for sub assembly and primary.

After complete inspection of the entire frame and assemblies, the fuselage receives its covering and moves into the upholstering station, after which the fabric covering is completed. At this point the fuselage is removed from the floor line, and the firewall and overhead trunnions are attached.

It is then placed on the second conveyor. Immediately in front of each fuselage is hung a framework of steel tubing with supporting brackets for holding a complete set of tail surfaces and landing gear. Fabric surfaces are taped on and the assemblies move through four stations before entering the dope room, where hand-operated

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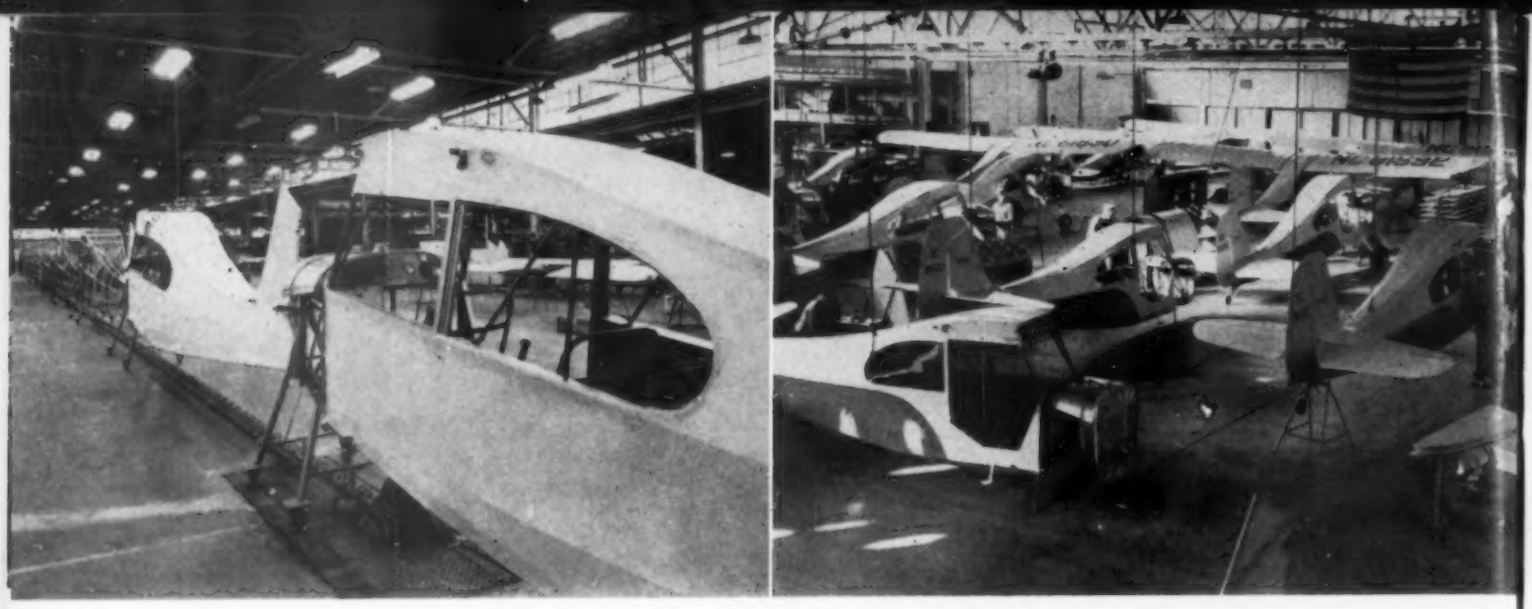


Aeronca Champion tandems from the floor-type conveyor at left receiving engines, wings and tail surfaces in final assembly (right). Here all components are fed automatically to reach final assembly precisely on schedule. Each Aeronca takes about two days to go through the factory, which is currently expanding its daily production from 20 airplanes to 35 per day.
—(Aeronca Photos.)

monorail conveyors carry the fuselage. On this third moving conveyor line are applied one brush coat of dope, an aluminum spray coat, one coat of color and trim.

The fuselage is then removed from the hand-operated line and returned to the second conveyor and begins moving into final assembly. The line rises in elevation to working heights for windshields, other installations and landing gear, and then descends to rest on the landing gear and tail wheel. Here the ship is placed in one of six parallel stations across final assembly.

From the time the fuselage frame is first attached to the first conveyor it is handled on trunnion carriers, which allow the fuselage to be rotated through 360 degrees at any time on any one of the three conveyors, thus making for ease of working and detailed inspection.

Wings

Aeronca is using a new wing for current production, and its most interesting part is the one-piece aluminum rib. These ribs are installed at the first station, along with drag wires and other fittings, of the moving line. A second station is provided for additional wing details, and tip bow and trailing edge metal are installed at the third station. The wing is completed at the fourth station with attachment of nose metal. At this point complete inspection of the wing occupies the full time of a special station. Then the wing, if accepted, moves on to successive stations for covering, attachment screws and tape, being placed on a fourth conveyor (hand-operated) to pass through the dope room where it receives one brush coat of clear dope, an aluminum spray coat and color finish, precisely in that order.

Placed on the fifth conveyor, wings move past spray booths where the license numbers are painted, with each panel being preceded by right and left aileron completely covered, painted and inspected. The wings then are removed to sub-assembly, adjacent to final assembly, and pass through two stations for installation of ailerons and small parts, making both right and left wing assemblies completely ready to be attached to the fuselage at the root and strut fittings.

Tail Surfaces

No. 6 conveyor, yet to be completed, is the overhead type. The conveyor cable begins in the welding department where stabilizers, elevators and rudders are inspected for alignment and welding and placed on a conveyor hook. The parts then move overhead and drop near to floor level to pass through the cleaning tank, then through a zinc chromate primer tank.

As ceiling temperatures are higher than at floor level, the cable carries parts as high as possible to aid the drying of primer. The cable lowers again to bench top level as it reaches the covering department, where parts are removed for covering and taping. The return trip of this cable delivers store details from stockroom to fuselage sub-assembly bins. Struts, oleo frames and axles are picked up at the sand-blast department and allowed to pass through the welding department where they are cleaned and dip-primed the same as the tail surfaces. Fuselage trunnion carriers from the No. 1 floor conveyor are also returned to the welding department by the cable conveyor, which will be 630 feet long when completed.

Final Assembly

Engines are stored at right angles to the final assembly line. Floor-type carriers move them through all engine installations to the second row of fuselages in final assembly, where an electric hoist lifts them from the carriers and conveys them to any one of six partially assembled airplanes on the second final assembly line. From there the six fuselages, with engines installed, flow into one of three lines, where the wings, windows, doors and struts are installed. The airplanes then move forward where gap covers, name plates and touch-up completes the job. Each Aeronca takes about two days to move through the 422-ft. long factory, and each completed airplane receives a final inspection requiring two hours and fifteen minutes before it is rolled out the door.

In order to apply a satisfactory finish in the time allowed, it was decided to use the hot dope method of application. This, according to Aeronca, makes it possible to obtain more complete coverage and durability of finish with minimum sanding. The wood shop is located directly over a humidity-controlled wood storage room, and this department not only fabricates spars, stringers, bulkheads and other wood parts, but also dips the pieces in a wood primer giving complete coverage. The old method called for painting wooden parts after they had been installed.

Aeronca's expansion plans include additional facilities for painting, welding, jig making, material handling, experimental and lofting facilities as well as more mechanized conveyor equipment. A large personnel office and cafeteria are also being added. ★ ★ ★

MAYHEM IN THE AIR

(Continued from page 35)

fires which destroyed a hundred or so airplanes in 1945 and the half dozen airplane fires caused by careless use of welding equipment or by laying drop-cord lights on or near fabric.

Mechanical Failure Accidents

Accidents due to the original structural design or faulty construction of the airplane are negligible. Cockpit appointments, however, have led to many accidents. They were caused by the inadvertent use of controls, switches, valves, etc. With the current trend toward carelessness, these errors are increasing. Visibility on the ground and in the air is lacking in most airplanes. Controllability on the ground is a definite factor in airport accidents. Many of the large number of collisions are indirectly caused by poor visibility and handling characteristics.

Faulty maintenance, haphazard inspection, and careless line checking caused accidents running into the hundreds. The highest frequency probably occurs in failed landing gears or retracting mechanisms. Spark plugs falling out, spinners flying off, wheels falling off, brakes grabbing, deteriorated shock cords breaking, and water in the fuel lines, all of these are evidences of bad maintenance. These are not isolated cases—they are happening by the dozens.

Miscellaneous Trends

Less numerous but typical of other trends is the tendency for amateur pilots to barge out on a cross-country flight in an airplane of low horsepower with no thought of its limited performance at high altitude. Accidents result when the pilot approaches a mountain range from the leeward side with an insufficient margin of altitude. Also these pilots attempt to take off from high altitude airports heavily loaded and head for terrain which rises faster than the rate of climb permits the airplane to rise. They proceed into canyons until trapped, and mishandle their planes in downdrafts.

Another type of accident which appears to be increasing in frequency is found in the charter trips in which commercial pilots are becoming lost, running out of daylight or into bad weather. Many of these commercial pilots have thousands of hours but lack cross-country experience. This type of accident invites government regulation of the non-scheduled air carrier.

In conclusion, there were well over 5,000 "reported" accidents with less than 30,000 registered airplanes flying. It doesn't make sense. It's Mayhem to the aviation industry of which you and I are a part. Accident prevention is primarily an educational problem. The entire industry must assist the operator, the instructor and the airport. Let's pull our heads out of the sand and face the safety issue, *now*.

★ ★ ★

Airmen's Calendar

January 21—PICAO Council Reconvenes, Montreal.

January 21-22—Northwest Aviation Planning Council, Boise Hotel, Idaho.

January 28-31—Institute of Aeronautimal Sciences Honors Night (Jan. 28) and Subsequent Meetings, New York.

February 26-28—Air Transport Association Engineering and Maintenance Conference. Place to be set.

March 1-5—Pan American Aircraft Exposition, Dallas, Texas.

March 8-16—Southwestern Aviation Exposition, Fort Worth.

March 10—National Aeronautic Association Board of Directors Meeting, Washington, D. C.

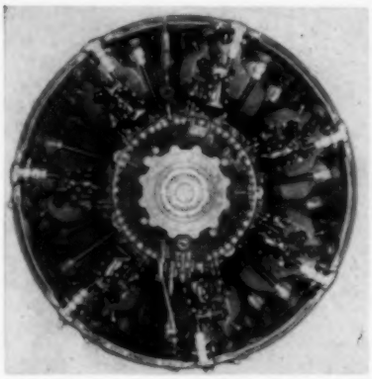
April 3-5—Society of Automotive Engineers National Aeronautic Spring Meeting, New Yorker Hotel, New York.

July 19-20—National Aeronautic Association National Convention, Omaha, Nebraska.

Pratt & Whitney's 3,650-HP. "Major"

BETTER cooling characteristics than most double-row engines possess are claimed for Pratt & Whitney's new four-row, aircooled Wasp Major, currently rated at 3,650 hp. (world's most powerful reciprocating aircraft engine now in production).

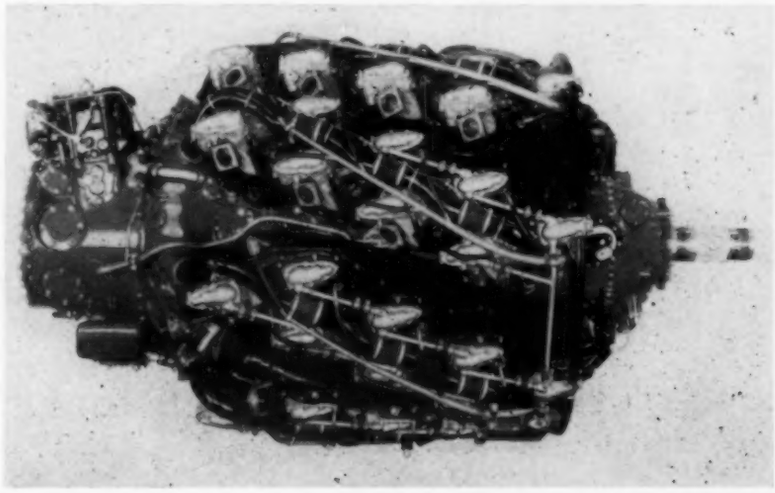
Its frontal area is only one inch larger in diameter than Pratt & Whitney's original 410-hp. Wasp, and the helical arrangement of its twenty-eight cylinders in four rows projects each cylinder into the airstream. Displacing 4,360 cubic inches, the Major is expected to be rated at even higher power output as its development is continued. Since that time, eleven airframe manufacturers have flown airplanes equipped with the Major, and its installation on many new aircraft has been revealed. These include Consolidated Vultee's six-engine B-36, Hughes' eight-engine Hercules seaplane, Boeing's improved B-50 Superfortress and four-engine Model 377 Stratocruiser, Martin's commercial four-engine Mars, Douglas' four-engine, 108-passenger C-74 Globemaster (DC-7), Republic's 400-mph. Rainbow, Boeing's F8B Navy fighter, Goodyear's F2G Corsair and six other military planes not yet revealed.



Frontal area of Wasp Major is same as that of 2-row Double Wasp of 2,100-hp.

Dry weight 3,405 lbs. ★ ★ ★

Arrangement of twenty-eight cylinders around crankcase provides large volume of air cooling for each cylinder. Conventional ignition harness is eliminated by use of seven interchangeable magnetos, one for each bank of cylinders.



TALK-DOWN LANDINGS

(Continued from page 30)

At the end of ten hours of instruments, they are able to do steep turns, rated climbs or descents, cruise, glide, and recover from unusual attitudes on instruments. A lot of private and commercial pilots would spend that much time and money to be certain they could fly where and when they want regardless of weather.

Like every good thing, GCA also has its disadvantages. Systems are now available for commercial airports and they cost a neat figure—about $100,000 each. This figure will probably come down with mass production.

Another disadvantage is the limited amount of traffic handled by a set like the one demonstrated at Boca Raton. Traffic must be held at altitude while each plane is being lined up with the runway and "talked in." Also, the "search" scope only shows an over-all picture of a 30-mile radius. Looking at it is just like scanning the sky on a clear day. You can see all the planes but you don't know one plane from another. Of course the controller can ask a pilot to fly a certain heading and then pick out the proper "blip."

Probably the greatest single drawback to GCA is one the reader probably has on the tip of his tongue. "Who wants to let some guy on the ground tell him how to fly an airplane through instrument weather. The guy in that trailer is snug and safe . . . it's not his neck if he guides you into a water tower." The Army recognized that sentiment and encouraged pilots to visit the GCA mobile units in England and France. Pilots were encouraged to make test approaches to see how well the controller could bring them in. The same procedure will have to be followed before airline or private pilots will consider making an approach.

Used to supplement present equipment, GCA would be invaluable for large airports. With these radar sets, tower controllers can see every airplane within thirty miles, regardless of visibility. This will prevent collisions with ground obstacles and between planes. In an emergency, when a plane must reach the runway quickly and accurately, GCA would be a life saver. The equipment would also be invaluable when weather suddenly upsets all predictions and ceilings over a large area drop below instrument minimums. Then, when the chips are down and gasoline is running low, the pilot who said, "Nobody is gonna tell me how to fly," will sigh with relief when a pleasant voice calls: "We have you in sight . . . range is six miles . . . turn to 270 and you'll be lined up with the runway . . ." ★ ★ ★

FLYING THE HOWARD

(Continued from page 41)

in as slow as the situation permits and push hard on the elevator when the wheels hit to prevent bouncing. If you accidentally hit on the wheels when making a 3-point landing, you can do either of two things. Push the wheel ahead to keep the wheels on the ground, and *keep pushing until the tail drops* of its own weight, or you can hold the wheel back and simply wait for the plane to land again. It is seldom necessary to use throttle to patch up a landing. If you do, be sure to be ready to take care of the torque. The sooner you dump the flaps after either a wheel landing or a 3-point landing, the easier it will be to handle. While I must admit that the Howard is hardest to land of any airplane I have flown, the difficulty is largely mental.

For greatest speed and economy the Howard should be cruised at least 6,000 feet above sea level. At that altitude the true airspeed will probably be over 150 and with a hand-rubbed finish may approach 160. If you have heard that the Howard is unstable, hard to hold on heading, hard to keep the wings level, you can take my opinion that it is no worse than any other airplane in its class.

While it is definitely not an airplane for students, experienced private pilots should find it convenient, comfortable and economical; and commercial operators should find it profitable for charter and local hops. ★ ★ ★

HISTORY-MAKING XB-42 MIXMASTER, pictured here shortly before it flew nonstop on December 8 from Long Beach, Calif., to Washington, D. C., in five hours and seventeen minutes for a new transcontinental speed record, was destroyed on December 16 when abandoned because of overheated engines in midair while on a local flight out of Bolling Field. Powered by two 1,820-hp. Allison engines installed in the fuselage just behind the pilots and driving dual-rotating Curtiss electric pusher propellers located in the tail, the XB-42 was the prototype for Douglas Aircraft's radical new commercial DC-8 design. It had a wingspan of 70 ft. 6 in., a fuselage length of 53 ft. 8 in., and military gross load of 35,702 lbs., including four tons of bombs. Note narrow tread of landing gear. It averaged 432 mph. in its 2,295-mile cross-country flight.

—(Douglas Photos.)

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Without getting too technical, **Simpli-Fly** Control involves the inter-connection of certain controls, which inter-connection at different settings is made visible to the pilot on a flight-control instrument that is not measured in degrees which people forget, but in English they can read.

If you want to take off, turn the flight control wheel until the needle points to "Take-Off." This means the airplane is trimmed for take-off mechanically. You don't need to worry about stick pressures, length of take-off run, or other conventional pilot operations on take-off. Advance the throttle, which lights the "Up" or "Power-On" scale on the **Simpli-Fly** control instrument, and when the airplane has gained flying speed, it automatically takes off.

After the airplane is off the ground, a few turns of the flight control wheel and the dial indicates "Climb." Now the airplane is climbing at its best rate of climb. You don't worry about how steep the climb, for the airplane, on the basis of the scientific pre-setting of controls, is obtaining its steepest or best climb without worry about "seat of the pants," best angle of climb, or fear of stall and subsequent spins.

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You're up. Now you want to come down. When the power is taken off, the "Down" or "Power-Off" scale lights up. The pilot sets the controls for "Approach." This trims the airplane for its flattest glide. Don't worry about speed through an overcast; don't worry about "stretching your glide," for you're in your flattest glide.

Now for the landing. Move the flight control wheel until the needle points to "Glide Control," and automatically you get the proper flap and stabilizer setting and, because the center of gravity is forward, the airplane sets down for a landing.

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Ruth Airways, R.R. No. 4, Oskaloosa, Iowa

Westair Sales, 221 David Keith Bldg., Salt Lake City, Utah

Ohio Aircraft Sales, 956 East Court St., Cincinnati, Ohio

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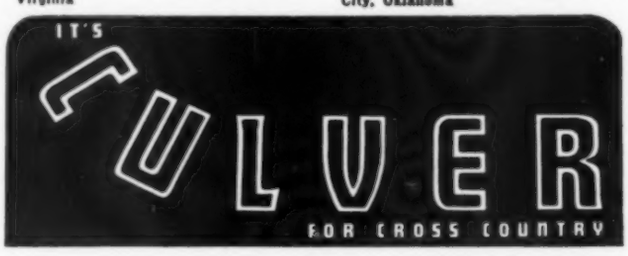

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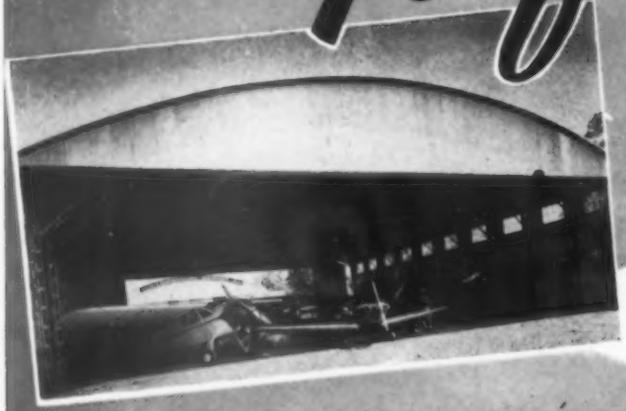
Fort Worth, March 8-16, 1946

Performance



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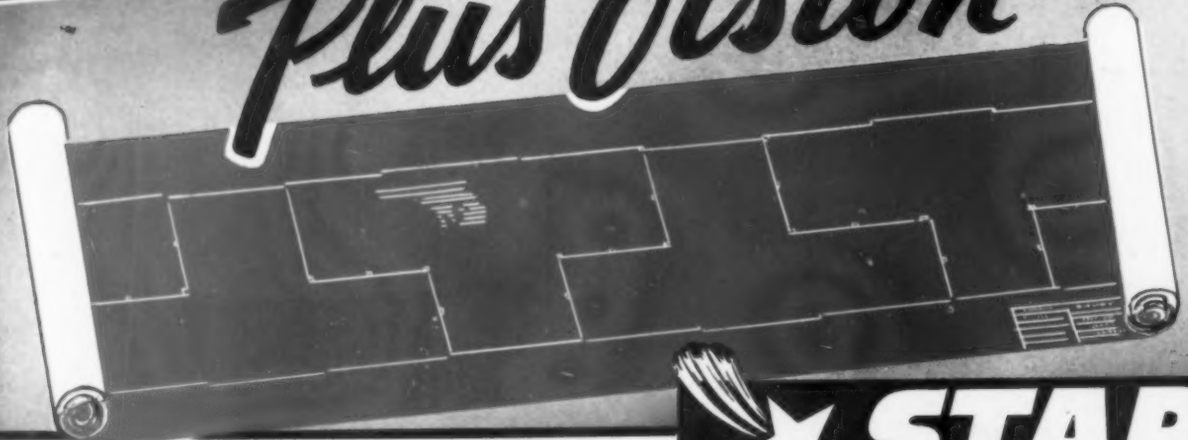

PREFABRICATED STEEL HANGARS

STAR MANUFACTURING CO.
3012 SOUTH STILES OKLAHOMA CITY, OKLA.

MODERN AIRPORTS

VOLUME III

January, 1946

NUMBER 5

The Parks Metropolitan Airport, on a 568-acre tract at East St. Louis, Illinois, is fifteen minutes from downtown St. Louis, and is the home base for Parks Aircraft Sales & Service. There are four hangars, shops, a display room, offices, commissary and lounge located at Metropolitan, with the display room being for the Ercoupe, for which Parks is a distributor. The airport was recently purchased outright from the Curtiss-Wright Corporation.

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MODIFIED PATTERN NEEDED FOR LIGHT-PLANE OPERATORS—by L. L. Schroeder 58

Three North American AT-6 trainers take off in formation from a turf-covered all-weather training field, which was sprigged with Bermuda at a total cost of approximately $50 per acre or about one cent per square yard. Bermuda and carpet grass seedings, including tillage, cost about $25 per acre or one-half cent per square yard.

Turfing the Unpaved All-Weather Airport

Turf, growing on stable well-drained soil, provides a satisfactory easily-expanded airport at a cost in proportion to revenues expected.

By GORDON H. JONES and R. C. DUNNING
Agronomists, Headquarters Eighth Service Command

THE unpaved, all-weather airport has a very important position to fill in future airport construction. Its principal virtue being economy of construction and maintenance, it offers to smaller municipalities the logical means of securing adequate airport facilities at a cost in proportion to the revenue and advantages to be derived from such an installation. In addition, it has a definite place to fill as an inexpensive emergency landing field, as a training field where all-over landing facilities are desirable, and in fact, as an airport wherever the usage of light planes is anticipated.

At present, the future demand for airport facilities for use by privately and commercially owned light aircraft is an unknown quantity. Aviation experts, however, anticipate a tremendous increase in private flying as well as an expansion of commercial air traffic with its network of main airways fed by feeder lines extending down to relatively small communities.

The unpaved, all-weather airport lends itself in an excellent manner to those airport sponsors who are uncertain as to the future of aviation for their municipality in that this type of airport may easily be so planned and designed that it is the first element in stage construction. As such, the facilities offered may be adequate for years to come, but may be readily expanded and improved whenever the expenditure of additional funds appears justifiable.

The subject of the unpaved, all-weather airport immediately presents to mind a multitude of construction problems, some of which are not completely solved. Of prime importance in this type of installation is an economical but adequate surface treatment to provide dust and erosion control even though subjected to intensive use by planes in all kinds of weather. Wherever climatic conditions favor its establishment the most satisfactory but inexpensive solution to date is a dense cover of sod-forming grass, commonly called turf, growing on stable, well-drained soil or soil-like material. It is primarily with this phase of construction that the following remarks are applicable.

Site Selection

The importance of proper site selection for an unpaved airport cannot be too strongly emphasized. In the site selected must be a composite of the many factors that properly combined will produce an airport which is easily accessible to the using agency and patrons, satisfactory to the aviator from the standpoint of operation and yet economically constructed and maintained. Both from the agronomic and the engineering standpoints there are certain requisites that an airport site must have if satisfactory results are to be obtained. The incorporation of these requisites in the site selected can save thousands of dollars otherwise expended in performance of construction measures necessary to rectify deficiencies.

Topsoiling Not Always Necessary

In preparing an airport to be turfed, one of the first problems which presents itself is the advisability of saving topsoil. The stockpiling and replacing of large quantities of topsoil involves considerable delay and expense. Assumption that this operation is an absolute necessity should be challenged in view of the fact that in many localities the subsoil is suitable for plant growth from a physical standpoint and will produce a satisfactory turf provided sufficient plant nutrients in the form of fertilizer are added. The advisability of saving topsoil is particularly questionable in some sections where the topsoil itself is relatively infertile. The cost of fertilizer represents only a small fraction of the cost involved in moving or saving of topsoil. Accordingly, while the practice of topsoiling is beneficial in some localities and under certain conditions may be essential to the eventual success of planting operations, it should by no means be considered a "must" item of construction. In this connection, however, there is a great deal of room for improvement

in dirt moving and grading specifications to devise methods of saving the maximum amount of topsoil at a minimum cost.

The establishment of a dense turf, regardless of the many and varied types of soil encountered, without resorting to costlier topsoiling methods, presents to the agronomist one of the biggest challenges in airport turfing. Soils on which turf may be grown and have been grown satisfactorily vary from a pure marine sand as encountered on certain air fields along the Gulf Coast to the heaviest of clays. Excellent turf has been grown on subsoils encountered on cut and fill areas.

Drainage

No discussion of turfed, all-weather airports can be considered complete unless it points out the great importance of drainage in the establishment and maintenance of turf grasses and in providing a landing area which may be used during periods of wet weather. Without going into a discussion of drainage systems, which is a topic in itself, it will have to suffice to emphasize the fact that surface water drains more slowly from turf than from pavements, and therefore more pitch or slope is required to remove water quickly from a grassed area than from a concrete or asphalt surface. In addition, a soil covered by dense vegetation may have as much as three times the absorption rate as the same soil void of vegetative cover. For this reason, porous loams or mixtures of loam and clay soils with more than 50 per cent sand are of great advantage from the standpoint of drainage on a turfed airport. In certain instances the use of agricultural drainage tile in limited areas may be feasible. While the costs of securing adequate airport drainage may appear excessive and the results are not readily apparent, it is a feature of construction which should be carefully designed and executed if satisfactory wet weather operations are ever to be obtained.

Fertilizer

As previously mentioned, the application of adequate quantities of commercial fertilizer is requisite for the establishment of a satisfactory turf, particularly on infertile soils. The fertilizer requirements of grasses for turf purposes are very different from those of most field crops. Grass produces a large amount of foliage for which nitrogen is primarily required. Because of this, together with the fact that nitrogenous salts are readily leached from the soil, nitrogen is usually the element which is likely to be most deficient in a soil. In general, therefore, the fertilizers which are recommended for turf are high in nitrogen, containing approximately one-half as much phosphoric acid as nitrogen and still less potash. The fertilizer grade 10-6-4 is a good example, the 10 being the per cent nitrogen, the 6, phosphoric acid, and the 4, potash.

Soil analyses, when considered in relation to the requirements of the grass to be planted, are very useful in helping to determine the types and amounts of fertilizers to be applied. Inorganic fertilizers of 10-6-4 and similar grades, however, usually should be applied at a rate of not less than forty pounds of nitrogen per acre, which would be a rate of 400 pounds per acre of 10-6-4 since it contains only 10 per cent nitrogen. On cut and fill areas it is usually advisable to apply at least twice that amount during the preparation for intitial plantings.

For most conditions the inorganic fertilizer mixtures are more satisfactory than the organic from the standpoint of cost as well as quick availability to the grass. The organic materials, however, have the advantage of being more lasting in effect due to slower decomposition and accordingly may be used to good advantage on sandy soils or in regions of high rainfall where inorganic fertilizers are leached rapidly.

New Trends in Stabilization

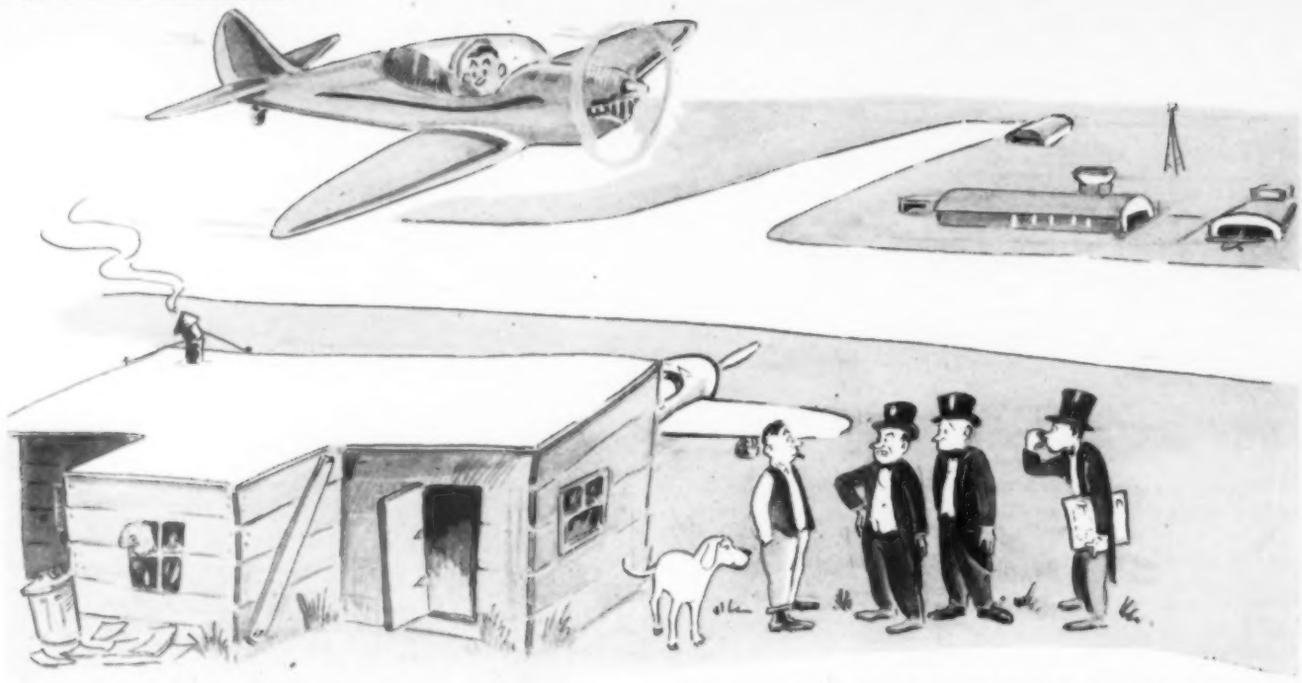
Certain stability and load-bearing qualities of the surface to be turfed are essential for all-weather airports. This is particularly true in regions of higher rainfall.

Several interesting developments have been made relative to increasing soil stability without destroying its ability to support the growth of vegetation required to provide dust and erosion control.

One of the newest and most promising developments made thus far under the stress of wartime construction has been the incorporation of various base materials with unstable soils and the establishment of a turf as a surface treatment on this relatively stabilized base. Unlimited possibilities in this type of construction are present with the shell materials, the limestones, the iron ore gravels, and the caliches, all providing excellent sources of base materials which, when properly incorporated with soil, would undoubtedly support the growth of a dense turf. Such construction would provide adequate all-weather operations for light

(Continued on page 60)

A government sprigging machine (above) plants Bermuda grass roots on a future all-weather airfield. The unique machine drops grass roots into open furrows and immediately closes the furrows. A rear view of the same machine is shown at the right. After planting, the soil is smoothed over with pneumatic rollers.



"... all airports will surely want an orderly and pleasing building area free from unsightly or unsafe structures which may be the result of poor planning or inadequate financial investment."

Uniform Rates for Airport Rental Space

By JOHN H. FREDERICK

MORE and more people and organizations are seeking to rent land areas on airports. They want to rent this ground for various purposes; for the construction of facilities to be used by an airline; for private hangars; for some other business connected with airport activities. Many airport managers, therefore, have been seeking some formula to be used in setting rentals for such ground space as they may find it profitable or convenient to lease. But seek as they may, there is no such formula. The most casual survey will, moreover, reveal that there is no uniformity of practice among airport managers. The following examples are revealing:

MUNICIPAL AIRPORT—A service organization dealing with private fliers was given a four-year lease on 800 sq. ft. of land adjacent to the airport administration building and facing the driveway to this building. A concrete block structure was built by the lessee at a cost of $4,000. The agreement provided that the lessee had the right to remove this building on the expiration of the agreement. A rental of $300 per year is collected which is equivalent to 37½ cents per sq. ft. per year. On the same airport hangars, owned by the city, are rented at the rate of 22 cents per sq. ft. per year.

PRIVATELY OWNED AIRPORT—This airport has built T-hangars of wood and sheet iron at a cost of approximately $400 per individual unit with an average of 800 sq. ft. space in each. These are rented for $15 per month or $180 per year. If a plane owner wants to build his own hangar, and quite a few do at this airport, space for the hangar is leased at a rent of $5 a month or $60 per year. This rate is equivalent to 7½ cents a sq. ft. for a T-hangar or 5 cents a sq. ft. for a 40x30 ft. individual hangar. Plane owners building their own hangars are required to conform to a uniform design; they cannot rent their hangars to others, and when they no longer need them, the airport owner has first option to purchase at original cost, less depreciation.

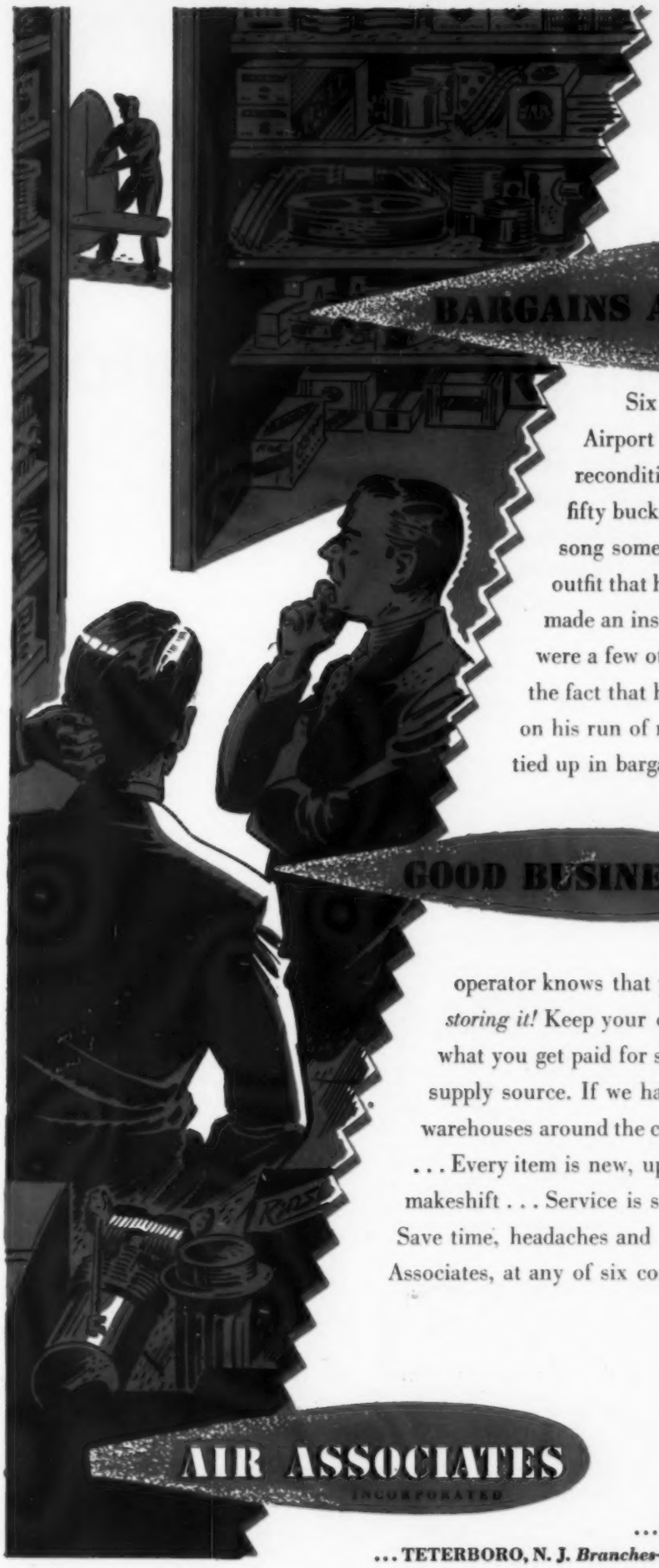
AT ANOTHER PRIVATELY OWNED AIRPORT—Here, plane storage under a shed costs $20 a month. Owners may, however, rent ground space of from 800 to 1,200 sq. ft. for $10 per month or $120 per year and build any kind of hangar they desire. These hangars may be rented to another person and the owners may remove them when they want to. This rate is equivalent, for most of the hangars that have been built, to from 10 to 15 cents per sq. ft. per year, depending on the size hangar that has been privately built.

Construction Standards

Leases which provide for the construction of a building by the lessee, must be made subject to construction standards applicable in the community. It is of considerable importance that buildings constructed on a municipal or other airport meet the proper standards as to safety, design, appearance, location, and size. Each airport will have different conditions to contend with but all of them will surely want an orderly and pleasing building area free from unsightly or unsafe structures which may be the result of poor planning or inadequate financial investment. Most buildings constructed on airports will remain there for a long time. Later dissatisfaction can be avoided if care is taken before buildings are constructed.

This is not intended as a suggestion to cities to make hangar lot or other ground leases only with those people who are financially able to construct

(Continued on page 59)



BARGAINS AREN'T ALWAYS...

Six months ago, a gent showed up at Whoozit's Airport with a small suitcase full of instruments, all reconditioned—practically a gift for a hundred and fifty bucks. Hank took 'em . . . Later, he picked up for a song some solenoids, switches and magnetoes from an outfit that had overhauled Navy trainer planes . . . A friend made an inside deal for some small motors . . . And there were a few other sharp buys. Lately Hank woke up to the fact that he had a storeroom full of stuff *he isn't using* on his run of repair and service jobs . . . and the $2500 tied up in bargains is needed in the business these days! . . .

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Selecting Reliable Airport Operators

The kind of impression airport employes make on customers can literally be translated into dollars and cents of revenue —or loss.

By LEIGH C. FISHER

IT is not sufficient for a community to plan its airport in the proper location and design it in such a manner that the revenue potentiality is greatest, nor is it sufficient to make provisions for the proper relationship between the airport management and the city government, unless concessionaires, operators and employes are properly selected.

There are certain lessees and concessionaires which must be carefully selected, such as fixed-base operators, fuel vendors, repair stations, food vending operators and other related functions which appear at any airport. Probably the most important phase of the airport's operation is the original selection of those operators allowed to maintain a business establishment on the airport.

Uniform Standards Needed

One of the most satisfactory methods for selecting responsible parties is to establish a set of operating standards outlining what is expected from each individual operator granted the right to use the airport. It must be recognized that in the future there will be a high degree of competition among operators to obtain leases since the expected growth of aviation seems to offer a lucrative field for investment; there will probably be two or three operators for each opening. So that the best of these may be selected for any given airport, it would be wise to establish operating and financial standards.

The operating standards might follow somewhat along these lines:

(1) All rules and regulations pertaining to the operation of the airport must be observed and continuous infraction will result in cancellation of the lease or contract.

(2) All buildings and grounds held by the operator must be maintained in an attractive and serviceable manner as established by the airport's management.

(3) Each piece of equipment must be maintained according to the best safety standards or, in the case of aircraft, according to those established by the CAA, and must be adequately insured.

(4) A standard accounting system must be maintained and kept open for inspection by the airport's management.

(5) Standards of courtesy and service by all employes of the operator must be maintained.

(6) A minimum number of personnel must be kept on duty at all times depending on the nature of the operation.

(7) Any operator applying for a lease or contract to operate from the airport must, upon acceptance by the airport's management of his bid for operation, establish a bond to insure compliance with the contract or lease.

As for concessionaires holding food vending rights, the provisions would be practically the same with the exception that the main consideration will be that of quality of service, personnel standards, and maintenance of attractive surroundings.

Employe Training for Service

The revenue development of the airport will depend upon the services offered to the customers, and by the treatment the customers receive from the employes at the airport. Under such circumstances it should seem obvious that the one answer is the selection and training of employes, not only those of the airport but also those of any operator or concessionaire on the airport.

Just recently I was talking with the head of a nation-wide chain of caterers, who operates airport restaurants at some of the large airport terminals. We were discussing the possibility of increasing revenues to the airport and the concessionaire in conjunction with restaurant, coffee shop and food vending privileges. He put forth some ideas which are not only basically sound from a business point of view in operating a restaurant or coffee shop, but which also could be useful to operators, charter and instruction schools and other business enterprises on any airport. First was that the personnel hired must have at least a high school education and have a personality suitable for meeting the public and dealing with them daily. Such personnel must be neat in appearance and maintain themselves in a clean and presentable manner at all times. Next, they must be trained in their specific jobs so that they can work at peak efficiency, offering the most courteous and satisfactory service to any customer, yet doing this in the minimum time and with minimum effort. Of course, he said that an organization that had personnel such as this would not be satisfactory unless the product vended was of a caliber higher than that which was obtainable in the surrounding area, and was as attractive as could be offered for the price.

This point of view can readily be applied to the operation of any type of business or service organization on an airport. The personnel must not only be of a caliber and nature that can meet the customers and deal with them, but also must create a desire or at least an inclination for those customers to return and transact more business. The attitude and appearance of the employes and the product or service offered must not only be satisfactory in price but must be completely acceptable and desirable from the point of view of the customer.

To establish customer relations such as this requires an organizational procedure for employe training and supervision. It should not be expected that an employe can be retained and immediately do his job in a proper and satisfactory manner

without a period of training to acquaint him with the local problems and conditions that exist. After the employe has been trained, and begins to discharge his duties, it will be necessary to maintain supervision to see that his duties are continuously discharged in a proper and satisfactory manner.

In developing an organizational cooperation such as this at an airport, it should be remembered that the airport is only a host or landlord to a group of businessmen who have no interest in each other except as how one another's operations affect each individually. For this reason the airport's management must realize that its prime objective and purpose is to establish a policy for the over-all operation of the airport and to suggest the relation that should exist between each operator and concessionaire using the airport. The airport's management should remember that a good operator must be offered an opportunity for a return on his investment and must make a provision in its policy to allow any operator this margin of freedom.

Community Interest Comes First

Unfortunately, in the past, and too often at the present, some operations are owned, operated and staffed by persons who have gone into this business only to protect their interests as such, without much consideration of other operators or the airport. Their organization and methods of procedures are apt to be sloppy and uneconomical. Any airport that allows this condition to exist or to continue not only hurts its over-all growth and development, but presents such an undesirable condition that it will be difficult to interest better operators in locating on the field.

The existence of such unpleasant conditions proves the need for operating standards. These operating standards should not only be for safety and financial ability, but also should include strict requirements in the maintenance of quality of service. Many times the argument will be put forth that to maintain a quality service such as is desired for a good airport operation will require a substantial increase in charges. In most instances this is not justifiable, since the removal of the sloppy and inefficient organization of the past will increase the volume of business and permit approximately the same rate of charges or possibly a decrease. This point of maintenance of fair and reasonable charges should apply collectively to all the operators on any specific airport so that a price or rate "war" cannot endanger the position of any of the operators.

The larger problem in aviation and airport development is not that of developing any certain airport or operator, but that of expanding the aviation interest in the community. The airport's management must establish and carry out a policy over a long-range period, aiding the development of each operator and concessionaire using the field and thereby increasing the service to the customer, and developing a greater revenue for the airport's operation. A suggested outline to develop increased airport patronage through relationships with lessees, concessionaires and employes would be as follows:

(1) Select reasponsible individuals or groups to conduct business enterprises on the airport.

(2) Establish and encourage operating standards, including observation of regulations, use of standard business accounting methods.

(3) Train all employes so that the

(Continued on page 60)

Pointers on Obtaining Surplus Airports

By JOHN H. FREDERICK

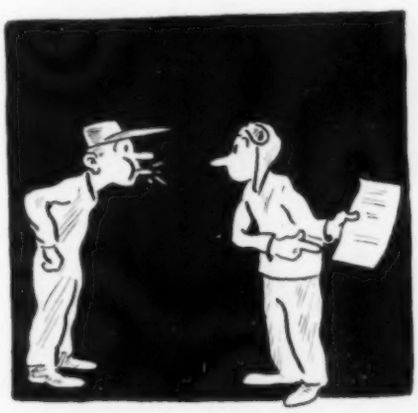
THERE has been much said and written about how communities are to obtain possession of surplus Army and Navy airport facilities but here are several pointers to summarize the situation and all of which should be kept in mind if a community is in the position to acquire an airport through surplus disposal.

1. Communities may acquire surplus airport properties including real estate, buildings and equipment for one dollar and other considerations.

2. Such properties shall be turned over to political subdivisions in tip top shape. Any expenses incurred in rehabilitating such properties, shall be borne by the federal government.

3. Political subdivisions must file desire to acquire such properties within thirty days from notification by Surplus Property Administration that such properties are surplus. However, in event additional time is needed, the Administrator of Surplus Property Administration has authority to grant additional time.

4. It is the intention of the federal government to turn over such properties to political subdivisions fully equipped, including necessary operational equipment on the field, the day the property is declared surplus. Should the Army or the Navy, after a community has been informed that such properties are surplus, attempt to remove anything from the property such as equipment items (crash trucks, mowers, etc.), the political subdivision should immediately notify the Surplus Property Administration in Washington. They will, in most cases, take steps instantly to stop this removal of equipment.



Personnel hired must have at least a high school education and have a personality suitable for meeting the public and dealing with them daily. Such personnel must be neat in appearance and maintain themselves in a clean and presentable manner at all times.

As for concessionaires holding food vending rights, the main consideration should be that of quality of service, personnel standards, and maintenance of attractive surroundings.

Standards of courtesy and service by all employes of the airport operator must be maintained. The attitude and appearance of the employes and the product or service offered must be completely acceptable and desirable from the customer's point of view.

Modified Pattern Needed For Lightplane Operators

By L. L. SCHROEDER
Commissioner, Minnesota Department of Aeronautics

AT the Oklahoma City Clinic, some discussion developed on the floor relating to the barring of light aircraft from large municipal air terminals.

Right in line with this problem is the question of traffic patterns and taxi patterns for light aircraft on the major airport installations. If the operators and aircraft owners conform to the usual traffic requirements on these monstrous airports, they face a situation which is at once impractical and economically impossible.

After the Clinic session I had the opportunity of discussing this problem briefly with John Geisee, Civil Aeronautics Administration. A tentative solution in the form of a plan was suggested for the City of Duluth by the State of Minnesota's Department of Aeronautics.

Salient factors of the proposed traffic and taxi pattern plan involve a special take-off point and initial landing point for light aircraft determined by (a) convenience of access from taxiway, and (b) adequate minimum runway length from point of initial take-off or landing.

After take-off, the first turn of the light aircraft is controlled entirely by elevation above the field and not by relationship to the end of the runway.

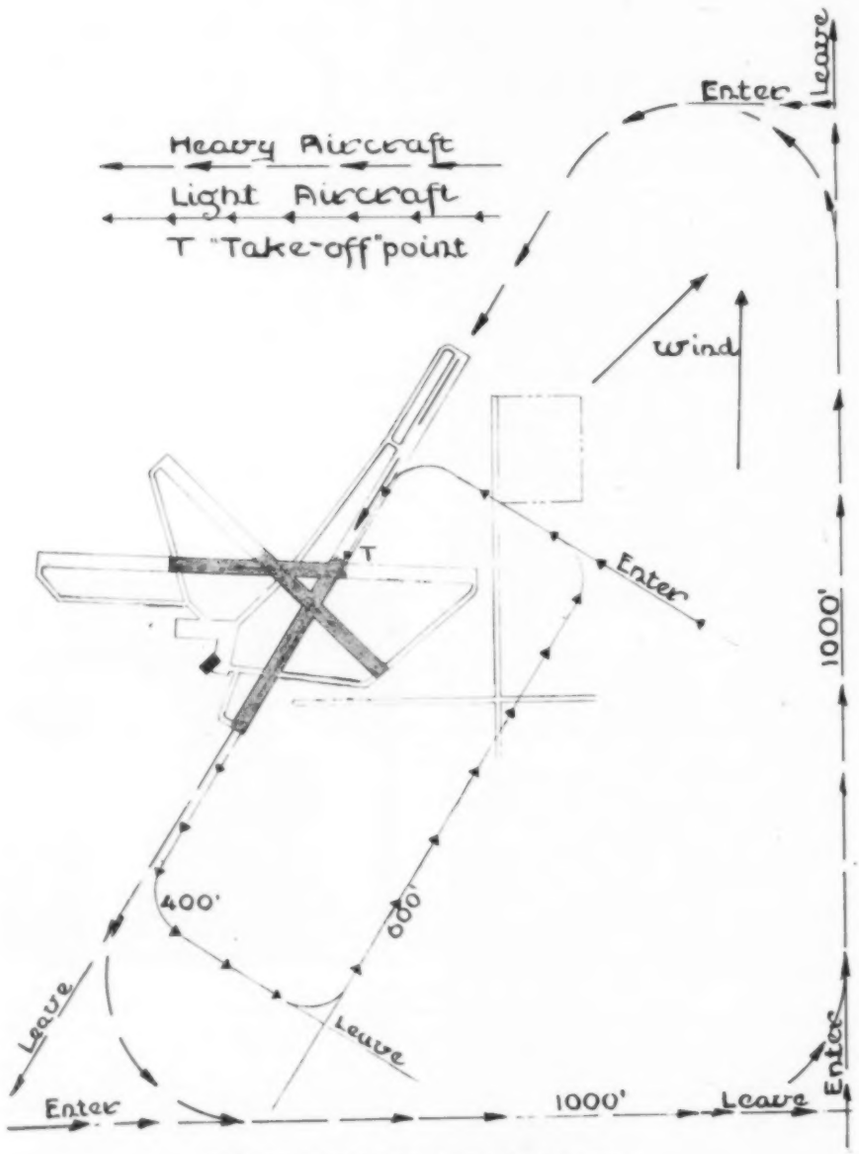
Undoubtedly there are a lot of bugs in this plan which will be developed only by discussion, but the advantages which are obvious may be listed as follows:

1. The light aircraft is not required to taxi a mile or more before take-off or after landing.

2. The light aircraft after take-off from a principal runway clears the runway immediately after obtaining minimum altitude (300 or 400 feet) by making the conventional left turn. This not only shortens the circuit for the small aircraft but also gets the aircraft out of the way of heavy traffic in the shortest possible time.

3. The lighter and slower aircraft are kept well inside of the traffic flow of the heavier and faster aircraft.

Points open for argument would appear to be the method of entering and leaving this inner traffic pattern and the procedure on the ground prior to beginning take-off at any point other than the extreme end of an excessively long runway. ★ ★ ★



TRAFFIC RULES SUGGESTED FOR DULUTH

1. For take-off, all light aircraft will use the portions of the runway indicated by shading in the sketch. 2. The pilot of any light aircraft may, at his discretion, use the full runway length. 3. All heavy aircraft must begin take-offs at the extreme down-wind end of the runway used. 4. For all taxiing, both light and heavy aircraft must use taxiways or runways not in use. 5. Light aircraft, about to enter the runway for take-off, shall hold, 100 feet away from the runway when any plane is on final approach and when any heavy aircraft is in position for take-off at the head of the runway. 6. Upon completing the landing roll, all aircraft shall turn off the runway at the nearest taxiway, or intersecting runway leading to the hangars. 7. After take-off, all light aircraft shall proceed straight until a height of 400 feet. A left turn may then be made and the pilot shall continue to climb until 600 feet, after which he may either remain in the pattern or leave. 8. After take-off, heavy aircraft shall continue straight until well beyond the lightplane pattern where the pilot may at his discretion, leave traffic, or continue in the pattern at a height of 1,000 feet, outside the lightplane traffic. 9. Light aircraft shall enter the rectangular pattern at 600 feet at any corner of the pattern (see sketch) or at a 45-degree angle intersecting the down-wind leg (airport manager should select method).

UNIFORM RENTALS

(Continued from page 54)

large and expensive buildings. Such a policy will be a mistake because it will eliminate all the prospective leases without considerable money to spend. It is, however, a suggestion for airport managers to insist upon proper construction standards whether the building is to be large or small. It is also proper that ground leases provide for minimum maintenance standards for buildings and grounds. Standards for repairs, painting, and cleaning should be specified in a general airport building maintenance code to be included by reference in all leases.

Suggested Provisions

To carry out the public purpose of an airport, it is believed that space of that character should be available to individuals and that leases for such space should be of a term type with the following general provisions:

Location: In the individual hangar lot area.

Size: Large enough for the construction of a hangar to house one airplane.

Term: One to ten years.

Rent: $60 to $120 per year.

Privileges: Use of publicly owned airport facilities.

Building: To meet airport construction standards. To be maintained in accordance with airport maintenace standards. Building to be owned and saleable by lessee. Lease to be assignable by lessee.

Insurance: Lessee to carry fire and public liability insurance.

Restrictions: Lessee not to engage in any business of any character on the airport and any airplane stored on said lot to be used for private pleasure and private business flying only, and not to be used for any operations for hire or reward.

Building Space Rental

Rental of ground space upon which lessees will erect storage warehouse and garage buildings will more than likely be on a specific rent basis under the provisions of a standard term ground lease. Property used for this purpose will be so located that it will have less value than that used for retail merchandising. Proper rent will have to be determined in each individual case, depending on the particular circumstances involved, but certainly at every large airport the following factors should be considered in arriving at the annual rental figure:

1. Location with respect to the administration building.
2. Access to the landing area and taxiways.
3. Access to the entrance or auto parking area.
4. Present value of the land on which the airport is located.
5. Acreage available for buildings.
6. Improvements on the landing area.

Leases for hangar lots upon which lessees are to construct buildings might cover the following points:

1. Naming of the parties to the lease and description of property.
2. Terms of lease, amount or method of determining rent, amount and time of payment of rent, provisions for renewal.
3. Provisions for the specific use of the property.
4. Provision for the approval by the lessor of plans and specifications of structure to be erected.
5. Provision for the maintenance of the structures and property.
6. Provisions regarding the storage of inflammable material.
7. Provisions whereby the lessee assumes liability accruing from the erection of structures and the use of the premises.
8. Provision for the payment of all taxes, assessments, etc.
9. Provision that there shall be no subleasing without the consent of the lessor.
10. Provision for the carrying of fire and liability insurance by the lessee.
11. Provision for the protection of the city against liens.
12. Provisions for cancellation and termination of the lease.
13. Provisions regarding ownership, at the termination of the lease, of structure erected by the lessee during the lease period.

It is not practicable to suggest a formula standard lease for the rental of land on an airport because every spot has local conditions to contend with which cannot be anticipated. It is, however, suggested that each lease be drawn carefully by an attorney and that each lease specify all conditions of the agreement between the lessor and the lessee. ★ ★ ★

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ALL-WEATHER AIRPORT

(Continued from page 53)

planes even under adverse soil and climatic conditions at a very reasonable cost.

In Florida, stabilization of fine sand shoulder of runways and taxiways on several Army airfields has been accomplished by incorporation of a three-inch layer or more or limerock or oyster shell with the top three inches of the subgrade. The resultant six-inch layer of sand and stabilized material was fertilized and planted to Bermuda grass, then watered and rolled until the desired compaction was obtained. The resulting C. B. R. was usually approximately 50 and the growth of Bermuda grass very satisfactory.

In another instance, an all-over landing field in Kansas was desired for all-weather operations. A three-inch layer of crushed rock was thoroughly incorporated with the surface soil and the area then fertilized and seeded. A good stand of grass was obtained and stability during wet weather was entirely adequate for the light training ships being used.

Similarly, sand-shell combinations commonly used along the Gulf Coast for stabilizing purposes have been found to support the growth of very satisfactory Bermuda grass.

Grass Species

The wide range of climatic conditions prevailing throughout the Southwest makes it necessary to give close attention to rainfall, temperature and other climatic factors in selecting the right grass for a given site.

Probably the most ideal grass for landing fields in the Southwest is Bermuda. This turf-forming grass is adapted westward without irrigation to approximately the 100th meridian, which extends roughly from Woodward, Oklahoma, to Laredo, Texas. Northward it is adapted to southern Kansas and Missouri. If irrigation water is available, Bermuda is useful throughout West Texas and southern New Mexico, Arizona and California below elevations of 5,000 feet.

West of the Bermuda territory and overlapping it for several hundred miles east is a native grass territory which will sustain the growth of Buffalo, Blue Grama and other native grass species under considerable airplane traffic. The western limits for airport use of these native grasses are hard to define due to variations in climate, elevation and soils, but established stands are known to survive traffic as far west as Lubbock and Amarillo, Texas.

In general, unpaved airport sites within the native grass territory must be selected primarily for the cover of native grass already on the site and requiring a minimum of leveling or grading, inasmuch as two years are usually required for establishment of a dense stand of native grasses. A dense cover of Bermuda grass, however, can be established within a period of from three to six months, depending upon rainfall, soil conditions and maintenance subsequent to planting operations.

Native grasses are established principally by seeding, whereas Bermuda grass may be established either by seeding or by vegetative means such as sprigging. The latter method is the more feasible in the colder and drier sections of the Bermuda grass territory due to the fact that such plantings are less likely to winter-kill and will withstand more drouth during the initial stages of its establishment.

Much time could be spent at this point in discussion of planting methods, particularly sprigging. However, suffice it to say that methods have been improved and satisfactory sprigging machines developed, the net result of which has been a cost decrease of from $150 per acre or more in the Eighth Service Command during 1942 to an average cost of $32.50 per acre in 1943, '44 and '45.

Costs of Turfing

A few average figures have been assembled from construction cost records to present some idea of the relative costs involved. Before going into these cost comparisons, it might be well to clarify one point. These comparisons are in no way a reflection of one method aganist another. They are simply statements of fact and as such should be judged on their own merit. In other words, turfing operations on airports should be considered strictly as engineering with vegetative materials and should be evaluated as such. Certain results must be obtained to meet the requirements of a using agency and to have economy of construction, the minimum design to meet the requirements should be used. Dense turf has already been described as a surface treatment. In airport construction, it might actually be considered as a low stability fiber mat, permeable to water but preventing to a marked degree the lateral movement of the soil surface and having the unusual virtue of improving with time rather than deteriorating.

Most of the Army airfields requiring all-over landing facilities in the Eighth Service Command were sprigged with Bermuda grass. The average total cost of this operation including tillage and fertilizing was approximatley $50 per acre or about one cent per square yard. Bermuda and carpet grass seedings, including tillage, seed and fertilizer, cost about $25 per acre or one-half of a cent per square yard.

If, as an example, an airport was constructed with three runways or flight strips 300 ft. wide and 3,000 ft. long (which probably approaches the average size required in order to allow for dispersal of traffic over the grassed surface) the total acreage requiring intensive surface treatment would be about 55 acres If a certain amount of overlap of flight strips is taken into account. Accordingly, if these runways were sprigged to Bermuda grass, the total cost would be approximately $2,750, or if seeded, about $1,375.

A 2 to 3-inch layer of gravel or a 2-inch soil-asphalt mat might be compared to this as minimum mechanical treatments providing similar results. The costs of these treatments would probably run from twenty to thirty cents per square yard as compared to the one cent per square yard for sprigging or one-half a cent for seeding. While the area requiring treatment mechanically would need be only one-fourth to one-third that of the area grassed, the total cost would still be considerably higher as would the subsequent maintenance costs.

These figures for turfing are based on the supposition that rainfall is sufficient to support a dense turf and that the load-bearing qualities of the soil are such that when covered with a mat of sod, no operational difficulties would be encountered during wet weather by the lighter types of planes.

Conclusion

In closing, it is probably well to emphasize the fact that turf specialists are fully aware of the limitations of turf for airports. Nevertheless, after allowances are made for all of its limitations, there still remain many possibilities for its effective use in the planning of postwar airport programs.

At present, we are in many ways still pioneering in this program of airport engineering with vegetative materials. Such a program necessitates the closest of liaison between the agronomist and the engineer. With such a liaison in both research and construction, however, the ceiling and visibility are unlimited for future construction of serviceable, inexpensive, unpaved, all-weather airports.

★ ★ ★

SELECTING OPERATORS

(Continued from page 57)

peak in customer service can be developed, thereby increasing the business and customer potential. This point should be observed by every operator, business, and individual on the airport and should include employes of the airport as well as executive personnel.

(4) Maintain the quality of service and develop an increasing amount of service without increasing cost.

(5) Stimulate co-operation between operators, concessionaires and the airport's management in establishing and furthering a public relations program in advertising and publicity to create an aviation interest and airport business potential in the community.

A procedure such as this should develop an aviation-minded community which will utilize the airport and its services to peak efficiency. As the interest in aviation grows and the business volume of the airport increases, so will the revenue to the management and to the operator, thereby enabling a continued expansion and growth in the community and its surrounding area. ★ ★ ★

Here's Opportunity for Ambitious Operator

There's a made-to-order set-up for an airport operator at Sinton, Texas. This thriving city, located in the level Gulf Coast cotton country, has a 186-acre airport but no airport operator.

Ben F. Benson, member of the Sinton Municipal Airport Board, wrote SOUTHERN FLIGHT for help in locating an operator. "We are looking for a good operator to come here and build up a nice business for himself, as well as to work with us in establishing a nice airport," Benson explained. "We would like to give him a fairly long term lease to operate shops, a flying school, a public hangar service, and gas and oil concessions," he added. The Sinton businessmen desire an operator who can bring in several planes and who would also offer new planes for sale.

Designated a year ago by the CAA, the airport site was purchased with $11,000 subscribed by Sinton business men. Located one-and-one-half miles west of the city, the airport has three 2,500-foot runways, a small residence, several small buildings, electric lights, water, and a telephone. An operator would have to build his own hangar and shop.

Former CAA Designer Becomes Consultant

Marc Thompson, formerly chief of building design service for the CAA, has joined the staff of Walter Dorwin Teague, industrial designer. Thompson will advise on airport terminal facilities and act as consultant to communities and others planning airports. While with the CAA, Thompson initiated the CAA's architectural service and wrote the manual "Airport Buildings," which will be published soon.

Chinese Students Studying U. S. Airports

Ssu-Ho Teng, Szu-Hou Shieh and Dah-Cheng Yung, Chinese students, have completed three months of intensive training in airport operations at Washington National Airport. The three employes of the China National Airways Corporation were selected by the Chinese government to study American airport operations; and their course included internship in the actual operations of the airport, air traffic control, communication, management, car handling, fueling, and weather observation.

The students will follow Washington with study at La Guardia Airport for a short period and then will go to Boston to study winter-operations, snow-removal, and other weather problems. From Boston, they go to Texas A. & M. for a short period of mechanical instruction and then to the Hawthorne Flying School, Columbia, South Carolina, for the routine of flight instruction operations.

U. S. Funds Obtained for Tower Operations

The Army and the Budget Bureau have transferred $1,500,000 to CAA to continue operations of ninety CAA Air Traffic Control Towers until June 30, 1946. The Congressional appropriations committee is to hear this month the CAA's application for $3,121,000 for Air Traffic Control Tower operations for the fiscal year beginning July 1, 1946. This appropriation includes the installation and operation of twenty additional towers during 1946-47.

Missouri Adds Two State Aviation Engineers

In a plan to further development of Missouri's state aeronautical program, the State Department of Resources and Development has added an airport engineer and aviation engineer to the department's Aviation Division. James O. Hunter, recently released from the U. S. Army Engineer Corps, was appointed airport engineer and Leo C. Harmon, until recently a naval aviator, was named state aviation engineer. Hunter's duties will include technical advice and assistance to communities in airport layout and construction while Harmon will aid in developing the state aviation education program and assist communities to install a state-wide uniform airmarking system.

Illinois University Opens Aeronautics Institute

An Institute of Aeronautics has been set up at the University of Illinois to administer all phases of the University's interests in aviation, research, education, and airport management. Allan F. Bonnalie was appointed director for the new agency. Bonnalie, an ex-Naval Commander, was formerly with United Airlines.

Illuminated Wind Cone and Rotating Beacon For Small Airports

An illuminated wind cone and pint-size rotating beacon for the small airport have been developed by Westinghouse engineers. The wind cone employs four 50-watt lamps instead of 200-watt lamps and can be seen even when airport weather is at lowest operating minimums. The rotating beacon delivers 100,000 candlepower instead of 2,000,000, uses two separate lamps and lenses, and is rotated by a 1/100 hp. motor.

City Airport Finances at 55 Cities Listed

A comparison of municipal airport finances in fifty-five cities is contained in a report prepared by the Bureau of the Census covering the year 1943 and released last month. The table below, taken from the Census study, lists operating revenues, expenses and gross debts chargeable to airport facilities (all figures are in thousands of dollars):

City	Operating Revenue	Operating Expense	Gross Debt
Los Angeles	$ 54	$ 45	$3,267
Chicago	169	120	215
Detroit	153	149	1,396
New York	569	270	17,806
Philadelphia	54	203	2,242
San Francisco	43	81	1,710
Baltimore	9	17	3,959
St. Louis	60	56	1,300
Cleveland	56	63	802
Oakland	95	93	——
Denver	77	103	270
Atlanta	36	29	——
Indianapolis	52	53	755
Minneapolis	74	54	680
St. Paul	31	35	654
Kansas City	37	61	2,410
Newark	36	11	335
Rochester	46	55	129
Cincinnati	22	26	322
Columbus	13	15	480
Memphis	30	13	549
Dallas	83	37	1,008
Houston	63	36	759
San Antonio	46	38	534
Sacramento	6	7	237
Ft. Wayne	45	56	——
Gary	19	16	160
Flint	14	21	——
Duluth	7	14	——
Omaha	17	33	541
Akron	19	35	——
Dayton	5	1	——
Youngstown	25	38	——
Oklahoma City	13	16	1,161
Tulsa	212	201	1,214
Nashville	113	54	726
St. Petersburg	28	25	——
Augusta	6	3	——
Evansville	53	59	326
Terre Haute	27	31	80
Sioux City	8	8	468
Shreveport	31	27	——
Jackson	27	24	——
St. Joseph	7	6	109
Lincoln	130	70	300
Marion	—	3	35
Bangor	8	9	——
Great Falls	16	13	139
Butte	—	11	——
Concord	5	8	36
Fargo	8	19	——
Abilene	44	12	——
Burlington	13	8	——
Yakima	10	9	31
Superior	2	2	——

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THE Sky's the Limit

BY BILL GREEN

An introduction to atomic energy. . . . Uranium will be expensive as a "fuel" but it offers much to long-range aircraft. . . . There are many industrial and medical uses for atomic energy. . . . Pan American gets pushed around by England.

Atomic Energy Prospects

IT is extremely interesting to note the furor caused by the dropping of two or three atomic bombs. Congress is busy attempting to get at the root of these things and it is apparent that most people believe atomic energy was discovered during this war. A lot of other people believe that we will soon have all forms of locomotion operating from atomic energy including a lot of vest pocket power plants.

It has been the history of developments of every kind that the early models do not disclose very much of the trend of later developments. The present electric light bulbs are not in any way similar to Edison's first. Neither are modern phonographs very similar to the original models. Modern aircraft do not resemble to any considerable extent the early flying machines. Just what the atomic engine will be twenty or thirty years from now we can only hazard a few guesses. However, there are certain immediate facts upon which we can make some assumption.

In the first place, the Curies, in 1903 in France, discovered certain materials that had the ability and characteristic of spontaneously partially disintegrating and leaving a different material for the parts that disintegrated. This spontaneous disintegration of an element was termed radioactivity and the material that in this particular case spontaneously disintegrated was called radium. To this day the unit of strength of such materials is called the "Curie" after Madame and Monsieur Curie. The quantities normally used are divided into thousands of Curies, or milli-Curies. In 1905, Albert Einstein, then in Europe, wrote the formulae and other facts regarding the energy released by radium, or any other radioactive materials. About 1908, a German by the name of Roentgen discovered that an electron boiled off of a hot filament could be accelerated tremendously by passage through a magnetic field or by attracting it towards a positively charged surface, and when thus accelerated and upon impinging upon the positive surface would cause a ray similar to the gamma rays emitted from radium upon the partial spontaneous disintegration. These rays and the apparatus for producing them became known as Roentgen rays, and the Roentgen tube. Some time later the rays were called X-Rays and the apparatus and the method used today in X-Ray work is that developed by Roentgen in 1908.

Since then and following the precepts of Einstein and the Curies, many scientists have dreamed of the release of atomic energy by some simple controllable process and the consequent utilization of that energy in machines. This was done in small degrees and for both industrial and medical purposes from that time until now. It only remained for the U. S. Government and the other Allied nations to pool their resources, spend a great deal of money and most importantly, accumulate sufficient quantity of the radioactive material to produce the explosive chain reaction.

The great contribution in the development of atomic energy came in the development of efficient refining methods and the utilization of relatively plentiful uranium oxide ore. Uranium apparently is the only one of the well known radioactive materials (radium, thorium, actinium and uranium), that is relatively plentiful. Of the others, only a very few grams are commercially in existence in the whole world, and the refining of the ore to produce them is an extremely laborious and costly process.

Various authorities have estimated that the cost, at present prices, of sufficient uranium to continuously produce the horsepower required to drive an ordinary automobile at reasonable speed would be about $30,000. This, assuming a not too expensive power plant, would mean that it would be prohibitive for the average light airplane. Even greater quantities would be required if more horsepower is required. The uranium would not be used up at any appreciable rate of speed as its half life would be somewhere near 1,590 years. This means that of your original "fuel," you would still have one-half of it left after operating your machine for 1,590 years. Thus the depreciation during one man's lifetime would be inconsequential.

It is not beyond the realm of imagination that atomic engines may be useful and economical in transoceanic aircraft. Certainly such atomic engines would not need to weigh as much as the gasoline and fuel tanks normally carried by such airplanes; moreover, atomic engines would obviate the necessity for hauling gasoline from refineries to out-of-the-way landing fields, sometimes thousands of miles distant. It also would eliminate the running out of fuel by a pilot who might be lost, as he could fly as long as his food lasted and perhaps a few days longer than that, without having to land except perhaps for weather. We think this is by far the best application of atomic energy, as almost all other forms of transport can find fuel very much more conveniently and cheaply and can carry more at one loading.

Industrial and medical uses of atomic energy should not be overlooked, as many of them have been used for many years. These include: (1) Both X-Rays and radium have been used in the cure of cancer and other malignant skin and internal disorders for many years.

(2) X-Rays and radium have both been used in the making of photographs through opaque objects such as teeth, bones and other parts of the human anatomy.

(3) Both X-Rays and radium have been used for the photographing of flaws, cracks, blow holes, and other details in structural and industrial castings, steel, forgings, valves, etc. Radium has been used for many years for the illumination of dials on watches, clocks, gauges, aircraft instruments, etc.

(4) The measurement of natural radium contents found in all rocks to some degree or other for logging of oil wells through steel casing has enabled operators to discover oil sands and other oil producing formations that had been abandoned or overlooked in the helter-skelter drilling operations indulged in many years ago.

(5) The bombardment of these formations by neutrons produced by a mixture of radium and beryllium similar to that used to detonate the atomic bomb in earlier experiments is capable of determining the density of

Clear the Runway

Eichler's Up There Solo!

EDITOR'S NOTE: *The author of the accompanying personal experience story is George H. Eichler, publisher of "Petroleum Equipment," who learned to fly on a bet. Seeing an airplane fly low by a window, he told a companion the pilot was too reckless. Whereupon the companion challenged Eichler's flying ability, only to learn he wasn't a pilot. "I'll bet a hundred dollars you couldn't even learn to fly," said the companion. So Eichler soloed and now has two hours and thirty minutes. When Associate Editor Bill Green, who writes "The Sky's the Limit" for* SOUTHERN FLIGHT, *heard Eichler's story recently, he persuaded the New Jersey publisher to write his experiences and the accompanying is the result.*

By GEORGE H. EICHLER

I will never forget the day I soloed. I had taken off and was up flying around the airport. My little ship had a two-way radio control. I plugged in and called the control tower and said, "Porterfield 2618 calling, please clear for landing." Some chap said to me, "Say, is that you Jersey?" They used to call me that because I came from New Jersey. He said, "What are you doing up there—you mean to tell me you are up there alone?" I told him I was soloing. I had had breakfast with this chap several times, and I repeated "Clear me for a landing, I am coming in." Jack replied, "You are coming in—five to one you don't make it." I said, "Don't worry, Jack, you had better get the strip cleared, because I am halfway in right now."

It was on a Saturday afternoon that I soloed, and on Sunday I asked them if they had a little Cub. It occurred to me that perhaps if I wanted to fly off some other airport they would not have a Porterfield, so I wanted to familiarize myself with a Cub. They had one, so I started down the strip, ready to take off. When I got out there, there was a great big four-engine Army transport. I looked like a midget beside him. I waited for about five minutes and nothing happened, so I pulled up alongside and said to the pilot, "What are you waiting for?" He looked at me with great surprise and said, "I'm waiting to get permission from the control tower to take off—what are you waiting for?" I said, "I thought maybe you were tired." Then I said, "How many hours have you had?" He answered, "3,600, and how many do you have?" I replied very emphatically, "One hour and thirty minutes." He said, "Buddy, please don't move until we take off!"

My turn came along next and I looked behind me and there were three other big ships waiting for me to get going. I don't know what happened, but I ran off the strip and wound up in the field. In fact, I almost did a groundloop. I looked back and saw these other ships waiting, so I taxied just as quick as I could in a circle because I didn't want to lose my place. Just about that time I heard a lot of static on the radio and looked up at the control tower and the green light was flashing back and forth. I knew the control tower was just hoping I would get under way—and also stay away. But this time I made a good take-off. I stayed up for about three-quarters of an hour, hoping that the control tower would forget all about me.

Just about a month ago I was completely deflated—and my ego was completely punctured. I was in Cleveland and wanted to go down to Canton, Ohio, which is just about fifty miles away by air. I thought that would be a good time to get some cross-country flight, so I called up the airport to see if they rented ships. The attendant said they did, and had some light Stinsons and Cubs, so I told him I would like to get one. "Do you have your log book with you?" he asked. I told him I didn't because I had come into Cleveland rather hurriedly. Then he said, "Do you have a license?" And I said I didn't exactly have a license, but I had soloed. Then he said to me very significantly, "How many hours have you had?" I told him with a lot of enthusiasm, "Two hours and thirty minutes." He said to me, "Mister, two and one-half hours—you have a nerve! We wouldn't let you sit in our ship." He then added, "Do you think you could get to Canton?" I said, "Certainly, I would follow the railroad track." Then he said, with a voice dripping with sarcasm, "Mister, I'm going to tell you something. You're going to get killed—but not in our ship." So I didn't fly to Canton. I went down in a taxicab instead.

But it was surprising how quickly I regained my enthusiasm. Yesterday I went out to the airport and ran across my old instructor. He took one look at me and said, "Are you still alive?" He added, "I guess I must have been a better instructor than I thought I was."

Some day I know I'll land my own ship at the Houston airport just to show them that I really did learn to fly. Regarding my own ship, I still have to sell my wife on the idea that I would make a good pilot. I told her that I could fly a ship just as well as I could drive a car, and she said, "That's what I'm afraid of," and she is only about four-fifths sold. But to tell the truth, I think she's holding out for another fur coat.

During either February or March I am going to see if I can't get enough time for a pilot's license. I think if more people knew how simple it is, and how safe the ships are, more of them would be interested in learning to fly. ★ ★ ★

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formations adjacent to the bore hole of an oil well through several thicknesses of steel, concrete, etc. Thus a complete log showing both density and natural radium contents, both of which are useful in determining the physical characteristics and identifying and correlating them with other logs may be made.

(6) The Penetron, a device patented by the Texaco Development Company, utilizes radium and a detector of radioactivity to bombard metal plate forming the walls of tanks or other vessels, and thus to determine the thickness of these walls, and also when desired to determine the fluid level within such tanks while access to only one side is possible. With this method, corrosion of tanks containing chemicals or other corrosive fluid, abrasion in tanks or pipes carrying abrasive materials, rust, etc., can easily be detected as well as many manufacturing processes can be easily controlled where the determination of thickness of sheets or coating upon metal or other surfaces is required.

(7) A host of medical and industrial uses are possible, not the least of which is the application of nuclear physics (atomic energy, if you please) to synthetic chemistry. It is easily conceivable that reactions developed in the presence of atomic disintegration may produce molecules and chains of proper desired characteristics, for example, synthetic rubber, which might be far more tenacious than any synthetic rubber thus far developed.

We have so many hundreds of possible applications for this nuclear

physics that its advantages to mankind may well be far greater than the disadvantages as an explosive.

We are inclined to believe that the danger of destruction to the whole world by atomic bombs is far overrated as there seems to be no logical or reasonable excuse to believe that chain reaction can be extended to all sorts of atoms of every kind. This spontaneous disintegration business has thus far been confined to four radioactive materials all possessing properties that are unique to them.

We talked recently to a man who inspected Nagasaki, an eye-witness after the atomic bomb explosion there. He assured us that in his estimation and from things he saw by walking around approximately an hour among the debris, that the same atomic bomb would not have caused nearly as much damage in an American business district as it did in Nagasaki. Strangely enough, there were a number of glass windows that were intact less than one mile from the center of the explosion. Also, there were many objects found among the debris which had not been damaged in any way.

There is not much doubt that any kind of an explosion is capable of killing people and destroying property and we don't wish to be misunderstood as to the devastating ability of atomic energy. There is one thing of considerable importance however, that should be kept in mind—whereas the materials for constructing TNT, dynamite, black powder, etc., are plentiful, the materials for making atomic explosives thus far are extremely scarce and extremely expensive. Incidentally, most of the uranium oxide used in the atomic bombs came from Canada and this country apparently has no considerable source of such material. Thus, any laws passed by the United States government restricting the application of atomic energy and research seem a little on the quaint side, inasmuch as it ain't even our horse we are talking about.

Aviation Pays Tribute to British

We were burned up a while back by the action taken by the British government in reducing the number of weekly flights which could be made by Pan-American Airways to England, apparently in retaliation for Pan-Am' reduction of the fare from $500 and some odd dollars to $275 from New York to London. The British permitted Pan-Am to resume their five weekly trips only when Pan-Am put the fare back up to where the British could compete with it.

At the same time we saw the advertisement of KLM, Royal Dutch Airlines, of daily trips from Miami, Florida, to several points in South America. KLM on this line offers almost exactly parallel service to both Pan-American Airways and American Export Airlines.

It seems to us that Americans treat everybody else a good deal more fairly than other people treat us. Sometimes we get pretty sick of this, especially after having compared Pan-Am service, which is as nearly perfect as possible, to that offered by some of the European airlines which operated in South America before the war. We have been told that the English air service never compared with the American service in either speed, luxury or safety, and we are wondering why we have to be the goats in their determination to hold their share of the business regardless of efficiency, cost or anything else.

Personally, we don't feel we owe the British anything. In fact, it's the other way around. Our government has steadfastly refused to help our merchant marine to get its fair share of shipping, and we believe that our way of getting even with the British would be to build more U. S. surface ships of a better type than anything the British have and capable of efficient and economical competition and to go after as much of the surface transport business as we possibly can. We ought to parallel every British line with faster and better ships and if they don't want to let us go into their ports, refuse them permission to come into ours. We think that we should cease our relentless competition only when they agree to compete on the basis of normal everyday business as established by U. S. customs. Thus far, it looks like they don't want to play the game the way that we have been taught it should be played. ★ ★ ★

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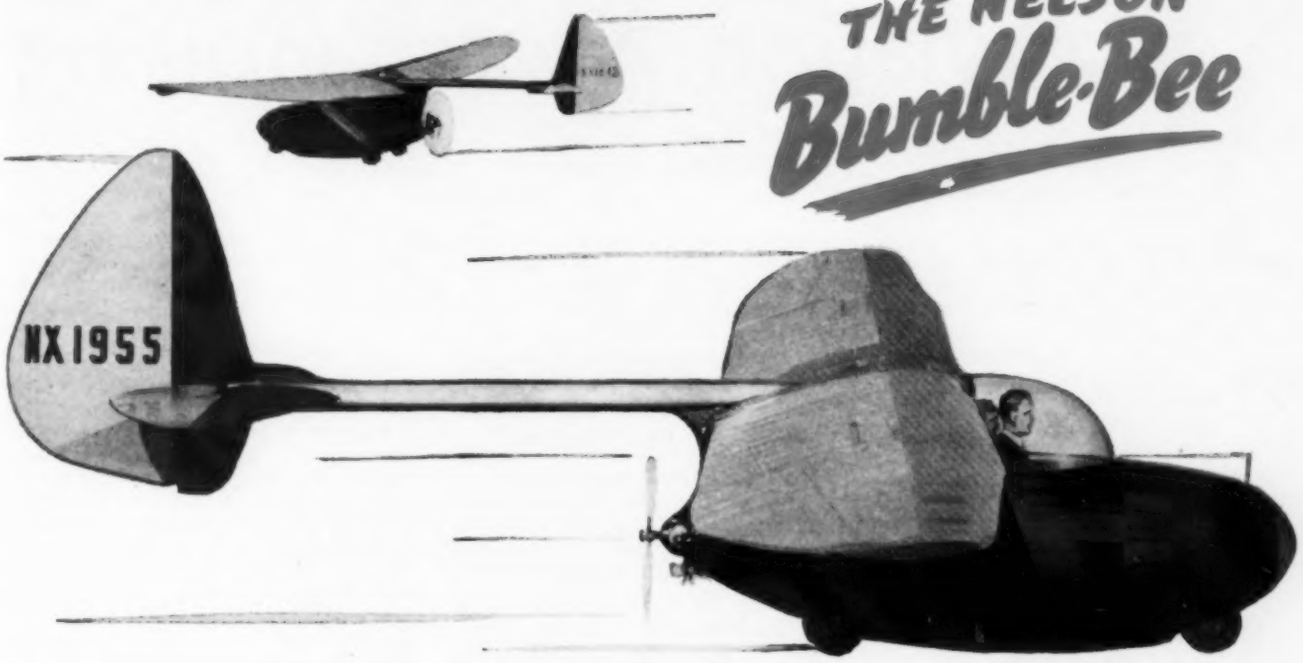

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★ **EXTENDED SOARING RANGE, ADDED SAFETY**—The engine can be started at will from the cockpit while aloft, providing extra hours of sport when thermal activity is at a minimum, and adding a valuable safety factor when the pilot has soared beyond range of his field.

★ **SIDE-BY-SIDE SEATING, DUAL CONTROL** — The 2-place BUMBLE-BEE provides side-by-side seating with unlimited visibility for both occupants in the roomy, Plexiglas-enclosed cockpit. Full dual control makes the BUMBLE-BEE ideal for training and instruction purposes.

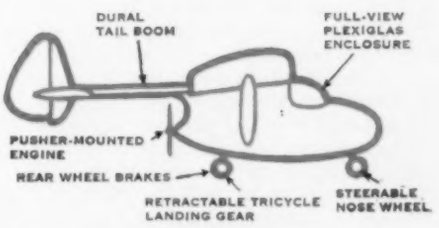
★ **AVAILABLE IN KIT OR FINISHED FORM** — For those who wish to take up gliding on a limited budget, a 10-unit kit is available containing everything needed for assembly and finishing, and with all structural parts accurately jig-assembled. This may be purchased one unit at a time — a convenient way to build up a fine ship at minimum cost. The BUMBLE-BEE is also available in semi-finished or completely finished "flyaway" form.

NOW'S THE TIME TO ACT — Limited production is now underway against a sizeable backlog of orders. Write, phone or wire for full information, literature and prices, then get your reservation in *early* if you want to enjoy this *all*-sport way of gliding next season! NOTE: *Veterans will be given delivery preference on presentation of an honorable discharge certificate.*

NELSON AIRCRAFT CORPORATION
13785 Paxton Street
SAN FERNANDO, CALIFORNIA

Designed by
WM. HAWLEY BOWLUS

Pioneer glider enthusiast, designer and builder of many of America's outstanding sport and military gliders, Wm. Hawley Bowlus has made another outstanding contribution to sport soaring in the auxiliary-powered BUMBLE-BEE.



★ **DEALERSHIPS OPEN**
Write for details

THE NELSON BUMBLE-BEE

ADMA Efforts Improving Aviation Merchandising

By GEORGE E. HADDAWAY

THE third annual meeting and first postwar conference of the Aviation Distributors and Manufacturers Association was held December 10-12 in Cleveland, Ohio. The total registration of approximately 200 included men from every branch of aviation manufacturing and distribution. It was an exceptionally well managed convention with a fast moving program operating on schedule and no long-winded speeches. With the exception of four short addresses on subjects of general aviation interest, all the papers and discussions were limited to the immediate problems existing between the manufacturers, their dealers and distributors.

Although a sharply defined difference of opinion exists between the manufacturers and the people who distribute their wares, especially as regards the subject of distribution through a large number of outlets instead of a relatively small number, all arguments were constructive and objective, though spirited, and the underlying attitude of the membership was a realistic and healthy one, almost scientific in its analytical approach to common, knotty problems.

All of the meetings confirmed a suspicion we've held for the last twelve months that more and more people engaged in the sale of aviation products are gradually becoming good businessmen and merchandisers. And although the ADMA membership does not reflect a true cross-section of the entire aviation field (we find only one ADMA member engaged in the sale of airplanes) the interest in and adoption of sound sales and service policies and merchandising practices that have been proved successful in other fields, particularly the automotive world, is definitely a good sign. But at the Cleveland sessions, the most important aspect was the fact that the manufacturer and his distributor might not always agree on fundamentals but they can sit down and argue like grown men and above all know what each other is thinking about. This isn't the general rule in aviation meetings.

Highlighting the "general interest" talks were one by the ubiquitous Bill Piper, president of the Piper Aircraft Corporation, and another by Jim Riddle, National Aeronautical Corporation. Piper carried the torch for the construction of thousands of small and unpretentious airports, the movement for which is now under way but in need of all the support and power we can put behind it. He enumerated other serious obstructions in the way of aviation progress, including over regulation and the factors contributing to the high costs of private flying. He admitted his company was losing money on its first postwar production according to expectation and would continue to for a few more months.

25-lb. Auto Pilot Predicted

Riddle's address emphasized the rapid influence of electronic research on the aviation industry and pointed out peacetime applications of the amazing radio and radar developments of World War II, including Ground Control Approach (explained in detail on page 28 of this issue), the Loran navigation system, the radio altimeter and electronic de-icing. He predicted that within two years' time it will be possible to install an electronic type of automatic pilot, weighing less than twenty-five pounds, costing between $100 and $200, on any airplane that flies. He also predicted that within five years a new electronic navigation system will be available which will accomplish complete navigation, collision prevention, traffic control and blind landings. It will be necessary to carry only one receiver in an airplane. It need not weigh more than twenty-five to thirty pounds and will employ radar, television, micro-wave and other electronic principles exploited during the war. In the meantime, Riddle emphasized GCA, VHF and the CAA's new omnidirectional radio range will give the airplane considerably increased utility.

Tom O. Duggan, right, of Thompson Products, hands his gavel to W. F. Scott, Jr., Supply Division, who succeeds Duggan as president of ADMA.

Distribution Debated

Heyliger Church, vice president of the Weatherhead Company of Cleveland, and Charles L. Corwin, Champion Spark Plug Company of Toledo, spearheaded the manufacturers' desire to encourage the establishment of a large number of small outlets throughout the nation, while W. F. Scott, Jr., of Supply Division, Inc., St. Louis and Ray Snyder of Chicago took the opposite stand, emphatically stating that such a policy is not applicable to the aviation market at this time and might even destroy the principal distribution houses such as their own.

Church argued emphatically for distribution through many outlets instead of selective distribution through a limited number of distributors, largely because long experience has shown that the former is the far more economical means of distributing a product. Charlie Corwin followed up the Church argument and pointed out we must not forget that the man who makes it possible for the distributor and dealer to be in business is the plane owner and if we want the industry to grow we must in some way endeavor to cut service costs to the owner. "This industry is very young," he stated, "but in the few years of its life it has made far greater progress than the automotive parts and accessory business did in the same period of time, but in both industries distributors feel the manufacturer makes the distributor. Quite the contrary is true. It is the ability of the account to render better, more efficient and economical service that eventually makes him a distributor."

Corwin, a believer in short profits, outlined the necessary variation in the margins of profits necessary for the distributor and for the dealer in accordance with the nature of the merchandise handled. For example, if a line requires a small investment in inventory, easy to handle, requires small shelf space, turns eight to twelve times a year, with no service required, it can be sold on a much shorter profit than a line that requires the opposite. The distributor can afford to handle such a line on an average profit of from 15 to 20 per cent, while 40 to 50 per cent

PRODUCTION OF 65-HP. SILVAIRES IN DALLAS is steadily increasing at the new Luscombe factory there, which is currently turning out three airplanes daily on a 40-hour week. The plant's working force now consists of 500 persons and more are being added. Eugene Norris is chief engineer.

would be required for hard to handle, slow moving merchandise requiring a heavy inventory investment and excess handling. Since the profit for the dealer depends in a measure on whether the merchandise is service or installed and usually provides a profit on labor, Corwin believes the profit to the dealer should average not more than 25 per cent.

Speaking on his company's experience in selling original equipment and replacement parts, Tom G. Tynan of the Electric Storage Battery Company also recognized the primary importance of the consumer especially as regards quality and service. Tynan subscribes to the precept that manufacturers of parts specify in their contracts to the original plane and vehicle manufacturer that the prices they extend apply only to the parts that go into the completed article and that the parts bought at manufacturers' prices are not available for the "after market" replacement trade by the plane manufacturer. Original equipment costs to the plane manufacturer, who is interested only in his delivered price, should not have to absorb such costs as consumer advertising, dealer trade advertising, after market promotional expenses, after market sales organization or cost of maintaining stock of early models that are needed by the after market trade. That is why Tynan's company reserves the replacement market for independent wholesaler distributors. Their costs absorb such items as listed above.

Richard N. Bomberger, Sensenich Brothers, considered various methods by which manufacturers should provide for their distributors and dealers. By helping the dealer sell, you also sell the dealer, Bomberger pointed out. He emphasized the need for counter displays, show case and window displays, which created a desire at the point or place where the sale can be consummated.

Buyer's Market Developing

Dwight P. Joyce, Glidden Company, made the significant observation that there will be a change from the seller's market to a buyer's market. Too much emphasis has been placed on the importance and value of a distributors' catalogue, which is a reference book rather than a sales weapon. He also expressed the opinion that we are definitely passing out of the era when most business in the aviation field will be done by mail and are coming into the period when active personal solicitation is what will really count. Backing up the statements of Church and Corwin that the cost of selling increases tremendously the farther the salesman gets away from the home office or branch and we must more actively and aggressively work the territory close to the home office.

Taking the stand on the problems of the distributor were G. B. Van Dusen, Minneapolis, W. F. Scott, Jr., Supply Division, St. Louis, R. V. Trader, Pittsburgh, R. B. Kenty, Air Associates, Dallas, and Ray Snyder of Chicago. Representing the largest jobbing houses in aviation, these distributing executives, all of whom "came up the hard way" in the business, outlined methods by which the manufacturers can assist them in their merchandising programs and how manufacturers' policies must be changed to correct present trade weaknesses.

Van Dusen gave positive proof that supply houses can not afford to stock and sell lines which do not provide an adequate margin. He reviewed the picture of ten aircraft supply houses and reported that four out of the ten lost money during 1944. Out of the six that made money, the one that made the highest margin of profit showed a net profit, after taxes, of only 1.98 per cent on gross sales. The average for 1944 was 1.63 per cent.

Cut-Throats Hit

Bob Kenty criticized the cut-throat policies of a few manufacturers and distributor who have no policy as to who is a dealer or what constitutes a dealer. He pointed out that a dealer may be (1) and airport operator; (2) a service and repair station; (3) a flying service or school; (4) an airplane or engine dealer; (5) a parts and accessory supply house. A true dealer should stock merchandise for resale to the private plane owner, stocks on hand readily available and convenient to the consumer. His company, Kenty reported, uses an application for dealership questionnaire and reports from field salesmen to determine whether the applicant is a dealer. The speaker received a generous ovation from the convention when he closed his paper with this statement: "Gentlemen, if you must use the railroads, let it be as an iron compass to guide you along your course as you fly above the earth's surface."

R. V. Trader, speaking on how the manufacturers and their representatives can be of greater assistance to their distributors, presented some interesting views of various distributors. They covered many subjects from more diplomatic and co-operative consideration of the distributors' problems to direct mail campaigns, closer co-ordination on obsolete parts and more effective explanation of new products about to be placed on the market. Trader told the group that what the distributor wanted was the manufacturers to send them a "man with a plan" instead of representatives merely filling their time schedule with a nice social visit. The distributor needs merchandising plans and the manufacturers' representatives might spend more time delving into the market potential, quotas, sales problems and other problems facing the distributor.

W. F. Scott, Jr., pointed out that there is not room for sub-distributors in the business at this time. "We've got thirty-five or forty people fighting for a total gross business which wouldn't split well between six or eight," Scotty stated. If the manufacturers think sub-distributors are needed, then price structures should be revised to allow sufficient margin. He told the convention that distributors are tired of losing orders to some people who think they can do business on a margin of 10 per cent or less. The matter must be clarified and corrected, he predicted, or there's going to be a lot of sub-distributors running

Surplus Lodestars on the conversion line at Dallas Aero Service.

LODESTAR CONVERSION

SURPLUS Army Lockheeds are being converted into comfortable "flying pullmans" at Dallas Aero Service. Since August 1, 1945, the Love Field firm, headed by Major W. F. Long, has concentrated on converting all-metal aircraft into luxuriously-fitted planes for executives and commercial concerns. Equipped to fabricate all parts needed for conversion, the Dallas sales and service organization renders a complete major overhaul, including new installations and upholstering, in about sixty days. Work is done by ex-airline mechanics, with Charlie Bradley, former Braniff and Delta Air Lines employe, in charge of engine overhauls.

First airplane converted was a Lockheed Lodestar owned by Jaqueline Cochran. Then Lineas Aereas Internacionales, of Mexico, wanted four Lodestars converted for use on a deluxe travel tour between Mexico City and Los Angeles. Equipped to meet U. S. airline standards, the Lodestars will carry fourteen passengers. Varig Airlines, of Porto Allegra, Brazil, ordered conversion of three Lockheed 10's and Aero Transportes, Mexico, sent two Boeing 247's.

Lodestars are being converted for C. R. Vose, New York City, for Robert Dollar, Dollar Steamship Line, and for the Skycraft Corporation, a division of the International Paper Company. The Phillips Petroleum Company and the Burrus Mill & Elevator Company have ordered conversion of DC-3's into deluxe executive planes.

A Lodestar interior is shown below before new installations and upholstery have been added. The same interior is shown at the right after conversion. Note the card table and luxurious day bed in the aft compartment. The picture at the top right shows the Lodestar after it has been refinished and painted.

around and the present distributors will be in there appointing their share of them.

Surplus Disposal Changes

One of two resolutions adopted commended CAA for making possible the publication of directories of certificated aircraft and airmen and called for the Administrator to do all in his power to improve and perfect the recordation system so that accurate and timely information would be available to the aviation industry. The second resolution covered the subject of surplus property and requested the following changes in policy on the part of disposal agencies:

(1) More accurate investigation of items offered and more complete description, according to customary trade type designations.

(2) A more equitable pricing program which will be in keeping with Industry custom and which will provide an incentive for each class of trade to participate.

(3) An Industry Advisory Committee to be appointed to provide information to the Disposal Agencies, on both the above and on the effect large quantity sales will have on industry.

New officers elected were W. F. Scott, Jr., Supply Division, St. Louis, succeeding Tom Duggan of Thompson Products, Cleveland, Ohio; H. P. Ladds, National Screw and Manufacturing Company, Cleveland, and J. C. Harrower, Air Associates, Inc., Teterboro, New Jersey, vice presidents.

Ray Snyder and Tom O. Duggan were elected to fill the two-man advisory board. George A. Fernley, Philadelphia, was re-elected executive secretary and H. Donald Richards, associated with Fernley, re-elected secretary. The new board consists of J. G. Bausher, R. D. Hicks, C. E. Montray, A. E. R. Peterka, Duane Stranahan, Walter B. Hawkins, George W. Jalonick, III, Rudy Mueller, Bob Trader and Harold F. Wood.

★ ★ ★

New Training Plan

Something new in sales and service, a "Certified aviation center," opened recently in New York City. The unique center, established by Eastern Air Navigation Service and the New York Aviation Corporation, is part of a nationwide plan. The plan is to provide properly trained personnel to operate similar centers throughout the nation. Under the GI Bill of Rights, a special course of instruction will be offered to a selected group of World War II veterans. Approximately ten students will be selected from each state and qualified students will be franchised to operate an aviation center in their home area. Students must be twenty-one years old, have a high school education, and either a pilot certificate with instrument rating or experience in Link Trainer operation or aircraft radio maintenance. In addition, students must have financial backing of at least five thousand dollars for establishing their own business.

Another Aviation First
that includes AEROLS!
Passenger and cargo service between New York and London by land based aircraft—this significant advance in airline travel has recently been inaugurated by the American Airlines System. Flagships for these overseas flights are reliable, four-engined DC-4's which are equipped with Cleveland Pneumatic's Aerol landing gear.
At each stop, Aerols efficiently absorb the landing shock and help the plane come in safely — insuring comfort and safety for passengers and crew. Thus Aerols contribute substantially to the success of these pioneering flights.
THE CLEVELAND PNEUMATIC TOOL CO.
AIRCRAFT DIVISION • CLEVELAND 5, OHIO
AEROLS*
*PNEUMATIC-HYDRAULIC (AIR-OIL) SHOCK ABSORBING LANDING GEAR

Twelve new Skyrangers, built by Commonwealth Aircraft, Inc., were recently delivered in a single day at Kansas City. Seven of the planes are shown above. Distributors who flew away the first planes were: Allied Aviation Corporation, Cockeysville, Md.; American Flyers, Fort Worth, Texas; Max K. Aulick, Orlando, Fla.; Coastal Aviation Corporation, Washington, D. C.; Commonwealth Aircraft Sales of Arkansas, Fort Smith, Ark.; Cowan Aviation Enterprises, Lumberton, N. C.; Mercury Flying Service, Phoenix, Ariz.; Northwest Aviation Company, Milwaukee, Wis.; Pago Airways, Inc., Rochester, N. Y.; Sky-Tech, Inc., Cleveland, O.; and Wells Aviation Company, Detroit, Mich.

First steps in developing a worldwide sales program have been completed by Air Associates, Inc., according to H. W. Hurt, export manager for the Teterboro, N. J., firm. Representatives have been appointed in sixteen foreign countries and territories and the company conservatively estimates it will soon double its prewar foreign market. Since V-J day, over sixty-nine foreign airlines, airports and aviation manufacturers have placed direct orders for supplies, radio facilities, and other aviation equipment.

ENGEL AIRCRAFT SPECIALTIES
REPLACEMENTS FOR ALL AIRCRAFT
EXHAUST MANIFOLDS
N. A. C. A. COWLINGS
COWLINGS, SPINNINGS
WHEEL PANTS
ESCONDIDO, CALIFORNIA EST. 1929

A clamp called "Cabl-Ox," designed for splicing or fastening wire rope, will hold loads in excess of the tensile strength of the rope used, the manufacturer claims. The compact device is made of special high tensile alloy steel and is cadmium plated for weather protection. It consists of five interlocking parts which fit around the rope and are then tightened by hand and wrench. The unit is made in all standard sizes from 1/16 to 3/4 inches. Additional information may be obtained from the Nunn Manufacturing Company, Evanston, Illinois.

NOTE:
Look to Skycraft
PRIVATE AIRPLANES
FOR BETTER—SAFER
AIR
TRANSPORTATION
SKYLARK
AIRPLANE & PARTS
CRAFTSMEN
SINCE 1934
Skylark Manufacturing Co., Inc., Venice, Calif.
Write us now for information about "Skycraft" dealer opportunities.

A lightweight nylon rubberized fabric tank, called Pliocel, has been developed by the Goodyear Tire & Rubber Company for commercial and private planes. The bladder type rubber tank weighs .42 pounds per square foot and a 100-gallon tank can be folded to the size of a woman's handbag. R. W. Richardson, manager of Goodyear's Aviation Products division, says Pliocel is already used by eighteen companies on some 30-odd models. The lightweight tank eliminates leakage, and is more crash resistant than either the conventional metal or rubber tanks, Richardson declared.

The Robinson Vibrashock unit, an anti-vibration device for delicate airplane instruments and equipment, is said to absorb 90 per cent of vertical and lateral vibrations. Available in three standard sizes, Vibrashock is designed to absorb vibrations when installed on such commercial and lightplane equipment as radios, instrument panels, seats, berths, engines, auxiliary power units, and radar and communication equipment.

The unit incorporates a stainless steel spring of special design with three-way freedom of movement. Built-in, three-way snubbers furnish a resilient stop to limit heavy loads.

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For example: Cessna UC-78 transmitters will deliver 60 watts, guaranteed range 200 to 250 miles with reel, 40 to 60 miles with fixed antenna.

We keep in stock a number of types of military radio equipment, all ready for immediate change.

We have in stock for immediate delivery, 60 watt transmitters, 200 to 400 KC receivers, motor antenna reels, etc.

Write us about our new low prices on all conversion work. Special discounts on two or more conversions.

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MEACHAM FIELD **FORT WORTH, TEXAS**

A fleet of small airplanes, personally operated by company executives, is planned by Don R. Mitchell, president of the Ypsilanti Reed Furniture Co. at Ionia, Michigan. Mitchell conceived the plan while visiting the Culver factory in Wichita, Kansas. He saw the new Culver Model V while it was still undergoing experimental flight tests and placed an order for the first Culver to be sold in Michigan. He will buy other planes as soon as they are available, he said. A personal airplane will enable his representatives to do a better selling job, Mitchell believes. In many cases, his representatives can fly to a customer, bring him back to the factory for a conference and factory tour, and fly the customer back home in the time ordinarily required just for a call on the customer.

Reporting it is now turning out fifteen planes a day, the Taylorcraft division of Detroit Air-Craft Products, Inc., expects to reach thirty-a-day production by February. Taylorcraft reports orders with cash deposits for 7,000 airplanes—more than were produced by the entire lightplane industry in 1941. To meet this backlog of orders, the company is expanding production facilities. A 68,000-sq. ft. addition, built during the war, has been converted to the production of the two-place Taylorcraft.

A new flat rate manual, published by the Aeronca Aircraft Corporation, should be very helpful to owners desiring airplane repairs and to operators who make the repairs. With the manual, the operator and owner can check the time spent on any job, multiply this by the hourly rate, add an estimate for parts, and arrive at an accurate figure for the job.

"Up until now, when an owner took a plane to an operator for repair work, the operator was usually unable to give him an estimate of costs involved," declares Lathrop Nelson, service manager for Aeronca. "If the operator did give the owner an estimate, it was often so far off that a $20 estimate might turn it into a $50 charge, thereby creating ill-will."

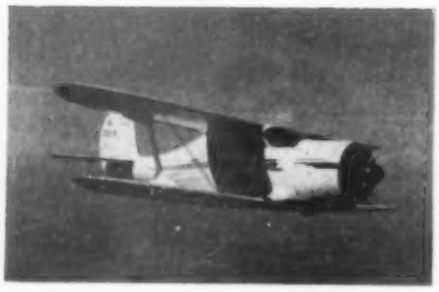
Harry M. McKay, left, heads the new Personal Planes Division of Fairchild Engine and Airplane Corporation, now located at Dallas, Texas. Robert S. Smith, center, will handle sales promotion and Lee H. Smith, right, will direct sales for the new division.

Parks Aircraft Sales & Service, Inc., of East St. Louis, recently received their first new Ercoupe and immediately began a schedule of demonstration flights at Parks Metropolitan Airport. The new Ercoupe, a two-place all-metal, low-wing monoplane, cruises at 110 mph. and is powered by a 75 hp. Continental engine. Equipped with self-starter, the sound-insulated Ercoupe sells for $3,144. Parks says Ercoupe production is expected to reach "30 or 40 planes daily."

The problems of the private pilot will be learned firsthand by top personnel of the Kollsman Instrument Division of the Square D Company. A flight training program is given Kollsman employes at Flushing, N. Y., airport, located only a few minutes ride from the Elmhurst plant. The company has its own Fairchild PT-19 and has employed Flight Instructor Al Engelen. Over 250 hours of instruction have been given since the program began.

THE BEECH AIRCRAFT CORPORATION

OF WICHITA, KANSAS



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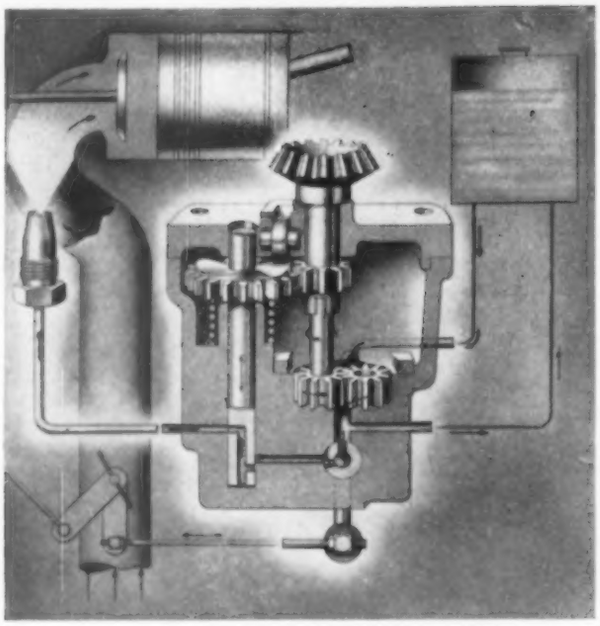

A new gasoline injection system for lightplanes is being manufactured by the Ex-Cell-O Corporation of Detroit, Mich. How the system meters the correct quantity of gasoline to the various cylinders is illustrated by the diagram. Fuel flows from the tank at top right, through a supply pump and metering valve, through a pumping and distributing plunger, and through a discharge line to a fuel atomizing nozzle which delivers the fuel to the cylinders.

A three-range hydraulic pressure regulator announced by Air Associates, Inc., will permit manufacturers to use one size of valve to meet the pressure requirements of 1,000-, 1,500-, and 3,000-pound systems. The regulator, known as the HC-2895 Unloader Valve, is capable of adjustment without disassembly even when in operation, the manufacturer claims. Capacity is sixteen gallons per minute with ½-inch lines and the regulator operates with an accumulator volume as low as 35 cubic inches. A port arrangement permits hydraulic line tubing to lie flat in one plane, eliminating sharp bends. Detailed information on dimensions, weight, and performance can be secured from Air Associates, Inc., Teterboro, N. J.

A fuel pump that holds discharge fuel pressure within ¾ psi. of the initial setting has been developed by the Candler-Hill Corporation. The pump, which is called the Titan, incorporates two relief valves working on a common guide pin to balance each other and make exacting pressure regulation possible. Two models have respective capacities of 830 and 1,600 gallons per hour at 2,500 rpm. Pressure adjustment is from 5 to 35 psi. and the manufacturer claims the twin valves will function without impairment or interruption at temperatures as low as 65 degrees below zero.

Precision Hand Tachometers that accurately register the revolutions per minute of any revolving equipment are offered by the George Scherr Company, 200 Lafayette Street, New York, N. Y. For extreme precision, each dial is individually calibrated for the instrument. Revolving shafts can be measured as close as one revolution per minute and fractions of one revolution may be estimated.

An all-purpose soapless cleaner, claimed by the manufacturer to clean castings and grease-coated machinery more effectively than acid, will soon be on the market. The cleaner forms suds instantly in hard, soft, or sea water, contains no abrasives, and is prepared in powdered form in 50-lb. cartons and 350-lb. drums. Known as "K. P.", the cleaner will be distributed through recognized jobbers, supply houses, and sales representatives. According to the K. P. Chemical Company, manufacturer, the cleaner was tested in aviation, machine tool and automotive applications "with commendable results."

An aircraft brake with a "built-in cooling system" is being produced by Firestone Tire and Rubber Company's Aircraft Wheel and Brake Division. Quick cooling, the manufacturer claims, reduces excessive brake temperatures and overcomes attendant problems of rapid wear, distortion of parts, leakage of hydraulic rubber parts, and tire and tube deterioration.

Lively postwar demand is anticipated by Bendix Products for Bendix Cleaner, used during the war as a cleaner for automotive and airplane parts. Service-trained mechanics are looking for products that take time-consuming drudgery out of cleaning carbon and gum from metal parts.

A contract for the disposal of surplus equipment has been concluded between Pan American Airways and the Charles H. Babb Company.

NEW, RANGER AIRCRAFT TRANSMITTER

Ranger, Model 204
Light Plane Transmitter

THE MODEL 204 RANGER TRANSMITTER is a 4½ watt, dry battery operated unit providing the maximum of power and range obtainable from a dry battery source. They are ideal for light plane installations where more than average transmitting range is desired.

Furnished complete with batteries, battery box, microphone, loading coil and cables. Available immediately. Priced at $110.00.

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NEW TIRES, POSTWAR GOODYEARS, AVAILABLE IMMEDIATE DELIVERY. 6.00 x 6 non-skid, 7.00 x 4, 8.00 x 4 smooth 4-ply. Large stock 6.50 x 10, 7.50 x 10, 8.50 x 10, Culver 5.00 x 4, 8.00-10.00" Smooth Contours or any tailwheel tire. Big stock Tires, Propellers, Spark Plugs, Batteries, Pyralin, Lifetime Windshields, Dope Fabric, Kollsman-Pioneer Instruments, Radios, Aircraft Bolts and Hardware, etc. Rush Delivery. Supplying many of the largest operators at lowest prices.

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FAIRCHILD AIRCRAFT

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W. D. Flemister, left, and W. T. Capps are president and vice president of Southern Air Sales Corporation, newly-formed sales and service organization located on Love Field at Dallas. The new corporation will be Texas distributor for the Fairchild Engine and Aircraft Corporation.

FOR SALE

Waco, four-place, YKS, 225 hp. Jacobs, 100 hours total time and no hours since topped; new tires; two-position propeller; two-way radio, full instrument panel; twelve gallons gas per hour; no oil; excellent interior; cruise at 130 miles per hour. One extra 225-hp. Jacobs engine included. $12,000. Offer price. Can be financed. 3851 Brayton Ave., Long Beach 7, California.

Here and There

Copies of revised Civil Air Regulations Part 04, "Airplane Airworthiness," which became effective November 9, 1945, may be obtained from the Publications Section, Civil Aeronautics Board. . . . Aviation Supply Corporation has announced it will reprint the AP3 Pilot Log Book with delivery scheduled for the end of February. Dealers names will be incorporated on the flyleaf at no extra charge for orders of 100 or more. Prices run thirty dollars per hundred books f. o. b. Atlanta, Georgia. . . . A thirty-five-year lease covering a location on Boeing Field, Seattle, Washington, has been granted Pacific Airmotive Corporation by the Board of Commissioners, King County, Washington. The sales and service organization also has branch offices at Burbank, Glendale, San Jose, San Diego, and Oakland, California; Anchorage, Alaska; Kent, Washington, and Kansas City, Missouri.

Harry C. Naugle, recently released by the Army Air Forces, has been named superintendent of maintenance at Hoosier-Parks Airport, the Indianapolis, Ind., base of Parks Aircraft Sales & Service, Inc. Naugle, who designed the prewar all-metal two-place lightplane, the "Mercury," said he is confident Indianapolis is a "logical flying center."

Major Robert S. Fogg, left, veteran pilot and seaplane specialist, is in charge of commercial float sales for Edo Aircraft Corporation, College Point, N. Y. John D. Scalbom, right, has been appointed sales engineer for Bendix airlines-type radio equipment for executive planes.

AIRPLANE PARTS: Large stock of surplus tailwheel fork assemblies — latest type reinforced shaft for both S-1A and L-6 Interstate airplanes. Price reduced from $32.50 to $20.00 while they last. Also pair of Porterfield landing gear complete. Carl F. Baker, 6301 Lindley, Reseda, Calif.

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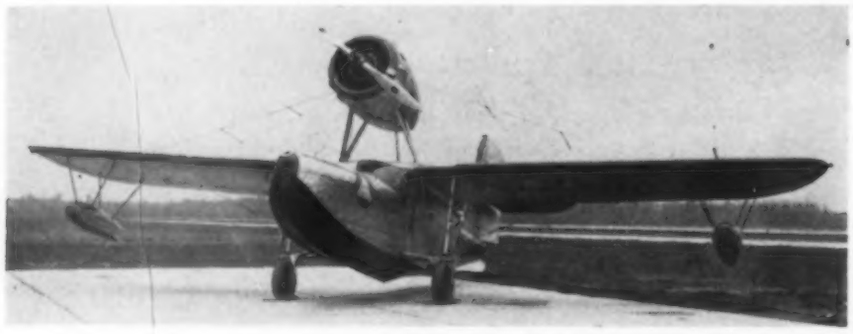
"Best on the market," says Texas distributor. Flottorps give longer service because of the stainless steel leading edge. Stand up under gruelling pounding of stones and gravel. Resist bruises. Are not thrown off balance. Cut your maintenance costs with Flottorps. Made for 175 different plane models.

FLOTTORP MFG. CO., Airport Grand Rapids 8, Mich.

"World's oldest manufacturer of wood propellers"



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All Metal Stainless Steel Fleetwing Four-passenger Amphibian. 300-hp. Jacobs Radial Motor. 50 hours since complete overhaul. Plane, motor and radio equipment in first-class condition. Price $12,000.00.

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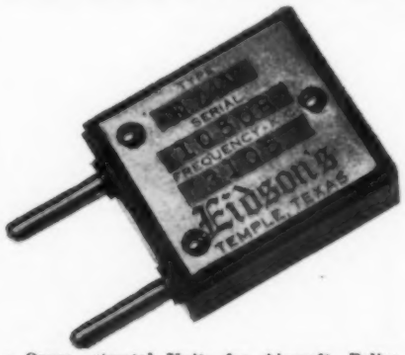
HUGH C. ROBBINS AND ASSOCIATES
P. O. Box 346, Troy, Ohio.



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TRANSMITTER TALK

KARL H. STELLO
Radio Engineer, Member Institute Radio Engineers

IT doesn't take much practice and effort to be a good aircraft radio operator. But many of the best fliers, although they pride themselves on being good pilots, are often poor radio operators because they do not know how to operate a radio transmitter or do not care.

The first and most important thing is to get your message through clearly and quickly. Call your station not more than three times and then pause for an answer. Give your call clearly, slowly, and do not hold the microphone button down longer than necessary. If you get no answer within a reasonable time, check your transmitter to see that it is operating properly, then make another call. Also check your receiver to see that it is on the proper frequency and continue to make short calls until an answer is received.

If you talk right into the microphone with lips touching, surprisingly little engine noise will be picked up. You do not have to shout. Do not attempt to talk with pipe, cigar, or chewing gum in your mouth since this may result in your message being hard to understand, making repeats necessary. Unusual words should be avoided in the interest of accuracy when sending a message. When difficult words unavoidably turn up, they may be repeated and spelled. The pilot says "I will repeat" or "I say again" when thus transmitting a difficult word or expression. When you expect an answer to your message, use the word "over." Use the word "out" to indicate you are turning off your transmitter. It is hardly necessary to add that any profane or obscene language cannot be used over the air.

Be courteous when using your radio transmitter. You don't go along in your automobile blowing the horn just because you like to hear it; don't use your radio just to be talking. Just because you have a powerful radio transmitter, don't be a show-off.

Take Care of Your Equipment

Do not drop your microphone while the current is on as this will cause it to lose sensitivity. Do not attempt to make repairs or circuit changes in your aircraft radio transmitter unless you hold a commercial, second class, or higher radio operator's license. It is against FCC regulations to make any changes in a transmitter which may affect the frequency unless you hold the proper grade Federal license or make the changes under the direction of a person who has the proper license.

Always leave the filaments on in your transmitter if you plan to use it from time to time in flight. Otherwise, it will take time for the filaments to warm up so that the transmitter will operate at maximum efficiency. Leave the high voltage off until you start to talk.

In short, give your radio equipment the same or better care than you give your plane and take pride in properly operating it for better communications in the air.

Aircraft

THE private flier and non-scheduled operator have long needed low-cost, lightweight radio equipment. With the CAA predicting a wide increase in plane owners during the next two years, and already designating VHF channels for non-scheduled operators, the need for good, low-cost communications equipment becomes even greater. Several well-known radio manufacturers, to meet this need, are going into production on VHF transmitters, transceivers, and lightweight receivers.

A VHF transmitter, designed by Bendix and now in production, shown on page 79 includes crystals for the two VHF channels assigned for non-scheduled operation (131.9 meg. for CAA airport control towers and 131.7 meg. for CAA airway ground stations) with provision for addition of three more crystals for future channels. The Lear PXer (pictured on page 79) is only six and a half inches wide, weight less than fifteen pounds complete, and will sell for about $125. It is designed to operate on a twelve-volt ship's battery. The Skyfone, built by the Hallicrafter Co., Chicago, weighs less than ten pounds will also sell around $125, and includes a five-tube receiver and ten- to twelve-watt transmitter. The Skyfone provides for push-button tuning.

Five VHF Frequencies

For the benefit of manufacturers who will make VHF radio equipment for private planes, and for the pilots who will use the high frequency equipment, the CAA has released a

Officials of the Hallicrafters Co. greet James Riddle, seated at right, special aviation consultant. Hallicrafters was well known before the war as a manufacturer of amateur radio equipment. The company's CA-2 Skyfone, radio transceiver for lightplanes, features a five-tube receiver and a 10- to 12-watt transmitter which together weigh less than 10 pounds.

The lightplane transmitter and receiver shown below are designed for the private flier and operates in combination to provide long-range, two-way communication. Manufactured by the Ranger Aircraft Radio Division of Electronic Specialty Company, the transmitter (left) is single-frequency (6210), weighs 13 lbs., 2 oz.; the receiver (right) covers 195-410 kc., weighs 2 lbs. 11 oz.

io Briefs

summary of its plans for VHF. Under the CAA's present plan, frequencies between 108 and 122 megacycles will be allocated to ground facilities while frequencies between 128 and 132 megacycles will be reserved for aircraft calling CAA ground stations. At first, private planes will use 131.7 megacycles for all CAA range stations and 131.9 megacycles for calling airport control towers.

The CAA believes that with increased radio traffic during the next year or so, five VHF transmitter frequencies will be needed — two for calling airway communications stations and three for calling control towers. Therefore, any VHF transmitter not providing sockets for five crystals may well become of very limited usefulness in a year or two.

VHF receivers, too, present a problem. While most private pilots intend to save money and get equipment suitable only for talking to control towers, the CAA prefers they also have equipment that will pick up radio ranges. Present VHF receivers for lightplanes are not equipped for "tuning" and, until calibrated tuning is possible, a 200- to 400-kc. receiver would have to be carried to listen to radio ranges.

"The use of a VHF transmitter appears advisable regardless of whether the aircraft receiver is for VHF or is a 200- to 400-kc. receiver," declares the CAA. Superiority of the VHF transmitter over the conventional 3105-kc. transmitter is quickly evident, the CAA believes.

Transmitters Ready Soon

With VHF transmitters soon available for lightplanes, calling the tower on 3105 kc. will be "just another memory" in a relatively short period of time, declares George Myrick, of Bendix Aviation Corporation's radio division. "Now that VHF transmitters will shortly become available to private fliers," Myrick said, "the CAA is hastening the conversion of equipment throughout the country. They feel that the majority of towers will be ready for this service by January, 1946, and that many ground stations will be ready by March, 1946."

W. L. Webb, director of engineering and research at Bendix, recommends use of the VHF transmitter in conjunction with low frequency (200-400 kc.) receivers already installed in many private aircraft. Later a VHF receiver and omni-directional range attachment may be added.

The VHF transmitter design incorporates provisions to meet future radio traffic congestion, Webb declared. "The new equipment includes crystals for the two channels now assigned and provides for the addition of three extra crystals for other VHF channels which may be designated when the increased number of flyers causes radio congestion in the future," Webb explained.

Five more master service dealer organizations have signed sales agreements for exclusive representation of Bendix aeronautical equipment, Myrick revealed. The new distributors, who will handle airline-type equipment for executive planes and the "Flightweight" line for lighter personal planes, are: Anderson Air Activities, Milwaukee, Wisconsin; Atlantic Aviation Corporation, New York City; Hawthorne Aero Supply, Orangeburg, South Carolina; Southern Airways, Inc., Atlanta, Georgia; and Southern Air Services, Memphis, Tennessee.

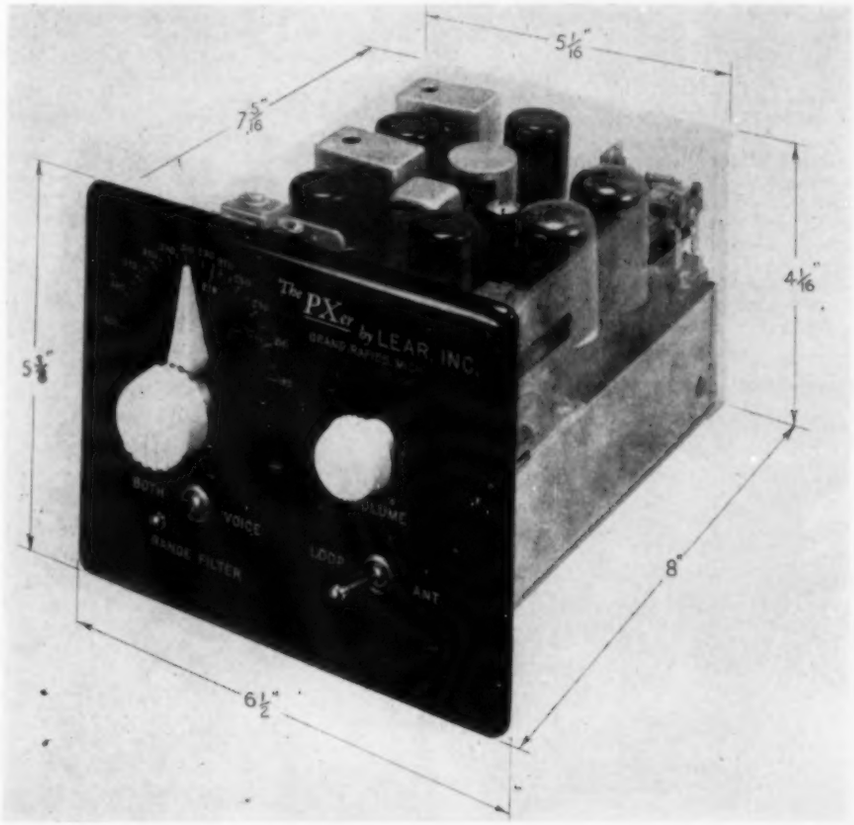
This VHF transmitter, designed for lightplanes by Bendix Radio, incorporates provisions to meet future radio traffic congestion. Designed for use in conjunction with low-frequency (200-400 kc.) receivers, the transmitters includes crystals for the two VHF channels recently assigned by the CAA to non-scheduled flying.

Personals

C. E. (Jack) Reid has been appointed manager of the Los Angeles branch of Air Associates, Inc. Reid will head both development and manufacture of advanced radio communications equipment at the Los Angeles plant, and will develop new distribution in the West Coast territory. Reid goes to Los Angeles from Air Associate's main plant at Teterboro, New Jersey.

Lt. Col. Milburn B. Andrews, recently released from the Army Air Forces, has joined Dallas Aero Service as manager of the electronic sales and service division. A pioneer in aviation radio, Andrews designed and installed the Southwest's first airline radio station at Love Field in 1928. Before entering the service, Andrews was supervisor of radio equipment for Amercian Airlines, Inc.

Macdonald Goodwin has been appointed general sales manager for Harrington Air Service, Inc., Mansfield and Cleveland, Ohio. Formerly assistant general sales manager for Taylorcraft Aviation Corporation, Goodwin is a member of the New York "Wings" Club and carries commercial and instructor ratings. Goodwin's new employer, Harrington Air Service, operates a new airport at Mansfield, Ohio, and a sales and service center in No. 2 hangar at Cleveland Airport. The corporation is distributor for the Republic Seabee, Beech Aircraft, Lear Radio, Romec Aircraft Pumps and Accessories, Firestone Equipment, Strand Steel hangars, and other aviation equipment.



Over-all dimensions of the Lear PXer, lightplane transceiver, are shown above. The tiny communications set weighs less than 15 lbs. complete with all accessories and is designed to operate from a 12-volt ships battery. The transmitter operates on 3105 kc. and a fixed antenna may be used, although trailing antenna is recommended for cross-country work. The PXer is scheduled to sell for $125.

NAVY CERTIFICATE OF ACHIEVEMENT has been presented to the Navy-Lockheed Service Center at Van Nuys, Calif., for exceptional wartime service. Left to right in the picture are Robert E. Gross, president of Lockheed; James E. Boyce, Lockheed operations manager at Van Nuys; Lieutenant Commander E. W. Shaw, Jr., Navy Bureau of Aeronautics representative who made the presentation; Reagan C. Stunkel, Lockheed general service manager, and Carl B. Squier, vice president of Lockheed. Over 1,000 planes of seven different types were modified at the Van Nuys base, which was closed on Dec. 31.

Cohu New Head of AIA; Piper Added to Governors Board

LaMotte T. Cohu, chairman of the board and general manager of Northrop Aircraft, Inc., was elected president of the Aircraft Industries Association at its annual meeting last month in Los Angeles. He succeeds Eugene E. Wilson, vice chairman of United Aircraft Corporation, who became chairman of the AIA's board of governors, succeeding Donald W. Douglas, president of Douglas Aircraft Co.

Others elected are: Robert E. Gross, president of Lockheed, and Lawrence D. Bell, president of Bell, vice presidents; and Harrison Brand, Jr., of Washington, D. C., secretary-treasurer. Elected to the executive committee were E. R. Breech, president, Bendix Aviation Corp.; Alfred Marchev, president, Republic; William M. Allen, President, Boeing, and Mr. Wilson and Mr. Douglas.

W. T. Piper, the lightplane manufacturer, was elected to the AIA's board of governors succeeding Clayton J. Bruckner, president of Waco. Other board members are: Mr. Wilson, chairman; Victor Emanuel, chairman of Aviation Corp.; R. E. Gillmor, president of Sperry Gyroscope Co.; J. H. Kindelberger, president of North American; Glenn L. Martin, president of the Glenn L. Martin Co.; T. Claude Ryan, president of Ryan Aeronautical Co.; Guy W. Vaughan, president of Curtiss-Wright; J. Carlton Ward, Jr., president of Fairchild; and Harry Woodhead, president of Convair.

Dallas Firm Contracts to Build 1,500 Globe Swifts; Fairchild F-24 Work Well Under Way

Approximately 1,500 Globe Swifts will be built in Dallas by Texas Engineering & Manufacturing Co., Ltd., which already is well under way on a contract for several hundred four-place Fairchild F-24's. Declaring an initial contract with Texas Engineering calls for production of more than $6,000,000 worth of Swifts, John Kennedy, Globe president, said Globe already has booked over $16,000,000 worth of orders for Swifts and increasing orders made it necessary to seek additional manufacturing facilities to supplement production in the company's Fort Worth factory.

Texas Engineering, headed by Robert McCulloch and H. L. Howard, both formerly with North American Aviation, who leased a portion of the NAA factory at Dallas when North American moved out, will produce the 125-hp. version of the Swift. The 85-hp. version of the Swift last month received an approved-type certificate from the Civil Aeronautics Administration—first newly-designed personal airplane to be ATC'ed for postwar.

McCulloch said quantity production methods which proved so efficient in North American's output of P-51 fighters and AT-6 trainers will be adapted to manufacture the two-place Swift. About 300 workers are presently employed at the Dallas plant, and this number is to be increased to 3,000 during the year.

Industry Down to 200,000 Employes; Hopeful of Future

Although aircraft industry employment has been reduced by over one million persons from its war peak to a current total of less than 200,000 persons, the industry will be able to stay abreast of new scientific discoveries affecting aviation and new developments will eventually provide a healthy expansion for the industry. This view was expressed by Eugene E. Wilson and Donald W. Douglas, retiring president and chairman of the Aircraft Industries Association at its West Coast meeting recently. The aircraft industry has weathered the first stage of its drastic postwar shrinkage, they pointed out, but to keep up with revolutionary scientific advancements the industry needs the support of a sound national air power policy fostering research and development.

DESIGNED FOR SPEED AND COMBAT, the Beechcraft XA-38 destroyer airplane was not completed in time for action against the enemy because of lack of engines. The plane, designated Beechcraft Model 28, and popularly termed the "Grizzly," has firepower of one 75 mm. automatic cannon and six .50 caliber machine guns. The twin-engine, all-metal, mid-wing monoplane has an empty weight of 23,230 pounds and a maximum alternate gross weight of 36,332 pounds. Its all-metal skin is flush-riveted.

Continental Tooling for Diesels and Controllable Pitch Propeller Output

Tooling is under way for production of a new diesel engine line and a new hydraulically operated controllable pitch propeller for lightplanes by Continental Motors Corporation, and work on the projects will start as soon as the tooling is complete, according to C. J. Reese, president. The propeller, which was developed by Continental Aviation and Engineering Corporation, subsidiary of Continental Motors, is to be made by that company in its government-owned plant. Continental now has orders for more than 34,000 engines in the 65 to 210 hp. range.

The leased government-owned building at Dallas, Texas, has been relinquished, and a factory branch in Dallas will be established. The branch will handle accessory assembly operations and testing on engines distributed from there.

AA Orders 100 New Convair Transports

American Airlines, Inc., has purchased 100 Convair Model 240 twin-engine planes from Consolidated Vultee Aircraft Corporation at an approximate cost of $18,000,000. The model is a forty-passenger ship, to be used as a supplement to American's DC-4 planes, and has fast and economical service for flights of less than 1,000 miles. Jet exhaust thrust, used by the Model 240 increases the plane's speed about 20 mph. Features of the plane include cruising speed of 300 mph. and 350 mph. maximum; main loading door on the front; reversible pitch propellers; elimination of much noise and airplane vibration by especially designed power plant installation; dual-tricycle landing gear equipped with steerable nose wheel, and larger windows. The plane has a gross weight of 34,000 pounds and carries a pay load of 8,500 pounds more than 500 miles.

IAS Library Moving

The Institute of the Aeronautical Science has purchased the former E. J. Berwind residence in New York City for its new headquarters, and occupancy by the Institute is expected this month. The building is undergoing alterations. Library service will be temporarily suspended while the W. A. M. Burden Library, The Paul Kollsman Library, and the card and reference files are being moved into the new quarters. All mail addressed to the Institute or its publications should be addressed to the new number—2 East 64th Street, New York 21, N. Y.

GE Axial-Flow Jet

The General Electric Company has developed a new axial flow turbo jet engine for high speed performance, driving military and civilian planes long distances. AAF designated J-35 and industrially called TG-180, the engine is long and light in comparison with reciprocating engines, and drives planes well in excess of 500 mph. There is but one moving part in the J-35.

ASME Resumes Schedules

The American Society of Mechanical Engineers will resume in 1946 its full schedule of national and regional meetings, which were interrupted by war. Programs are being lined up, with leading engineers, scientists and government leaders as speakers. The first national conclave will be the Spring meeting at Chattanooga, Tenn., April 1-3. The regional aviation meeting will be held at the University of California at Los Angeles, June 3-6. There are also meetings scheduled for Detroit, June 17-20, Boston, September 30, October 1 and 2, and in New York December 2-6.

Opens Coast Office

Minneapolis-Honeywell Regulator Company's aeronautical division has open offices on the East and West coasts for the sale of automatic controls to the aircraft industry. Richard Brown has been appointed head of the Eastern division, with headquarters in New York City. Carl A. Anderson has been named head of the Western division, with offices in Los Angeles. Also, R. G. Hoch has been placed in charge of Aero Division sales in the Mid-West, with headquarters in Minneapolis.

Advanced B-29's With 3,600-hp. Engines Ordered

Advanced models of the B-29 are to be produced in limited quantities in 1946 for the Army Air Forces and will be officially known as the B-50. The B-50 is to have four Pratt & Whitney Wasp Major engines, with a maximum rating of 3,600 hp. each. Reverse-thrust propellers are to be utilized. The wing of the B-50 will be lighter and stronger than the B-29, and it will have a lighter landing gear. New and larger vertical tail surfaces are to be installed. Boeing's production plans include simultaneous production in Seattle of both the B-50 and the YC-97 under limited contracts.

Flying Wing Robombs

Northrop's flying wing jet-propelled robot bombs, a highly secret project during the war, have an effective range of more than 100 miles at a speed of 350 to 400 mph. The jet-bomb is fabricated of aluminum and magnesium. It is powered by a jet engine supplied by the Ford Motor Company, and the power installation is in the wing itself. The jet-bomb has a span of less than 30 feet and weighs about 7,000 pounds, with an athodyd engine. The robot plane has no conventional fuselage, and has a single vertical fin for stability. Portable launching platforms are made possible by the use of the short sleds. During the war, more than 1,000 of the launching sleds and a quantity of the jet-bombs were delivered.

Aero Institute Started by Northrop Aircraft

Northrop Aeronautical Institute for veteran and civilian resident and home study courses in aircraft arts and sciences and located on Northrop Field has been established with opening slated for March 4, 1946. Extension courses based on new methods of home study presentation are expected to open this month. Director of the Northrop project is James L. McKinley. Two new buildings and a large field hangar, formerly used by the Army, will house the Institute. One building will have the administrative offices, engineering and drafting rooms and class rooms. The second new building will have modern shop and laboratories.

Martin Converting C-54's

The Glenn L. Martin Company has signed contracts mounting to more than $13,500,000 with eight domestic and foreign airlines for the conversion of C-54 transport planes, declared surplus from the ATC, into luxury airliners. Contracts for the job have been signed with Pennsylvania-Central Air Lines, Transcontinental and Western Air, Inc., Eastern Air Lines, Pan American Airways, Northwestern Airlines, Braniff Airways, Chicago and Southern Air Lines, Doderro (Argentine), and Cruzero de Sul (Brazil).

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PERSONALS

GORDON T. WAITE, engineering representative, Consolidated Vultee Aircraft Corporation, has been elected national chairman of the National Aircraft Standards Committee. . . . N. W. HOPKINS, director of public relations for Continental Motors Corporation, has been appointed advertising director for the company. . . . L. J. CATLIN, Douglas Aircraft Company standards engineer has been elected Western Division chairman for NASC and JAMES F. HAMMOND, Boeing engineer, has been named head of the Eastern Division of NASC. . . . DONALD S. GRUBBS, formerly audit supervisor for United States Steel Corporation, has been appointed treasurer of the Luscombe Airplane Corporation, Dallas.

GEORGE D. YEAZEL, formerly assistant director for the Spartan Aircraft Company's school of aeronautics, has been named factory sales representative for the Surface Combustion Corporation, with offices in Kansas City, Mo. . . . JULIAN LOEBENSTEIN has been appointed sales manager of the new Selenium Rectifier division of Radio Receptor Company, Inc. . . . CAPT. C. S. MAY, employed in the engineering development division, Vultee Aircraft, Inc., before the war, has been appointed general manager of Robinson Airlines. . . . CHARLES A. ULSH has returned to work at the Boeing Aircraft Company as general superintendent of the tooling department.

W. S. MOUNCE, formerly senior metallurgist with the Hamilton Standard Propellers division, United Aircraft Corp., has joined the development and research division of the International Nickel Company, Inc. . . . COL. JESSE G. VINCENT, vice president in charge of engineering at the Packard Motor Car Co., has been elected to the board of directors of the company. Vincent designed America's first twelve-cylinder automobile, the Packard Twin-Six. He supervised creation of Packard's Diesel aircraft engine, and he contributed to development of the Rolls-Royce engine for aircraft. . . . CAPT. AL G. HANDSCHUMACHER has been named sales engineer for Lear, Incorporated.

RICHARD H. BAILEY has joined G. M. Basford Company to handle public relations accounts for its clients. He will also continue to handle public relations for Fairchild Camera and Instrument Corp. . . . VALENTINE A. LUCE has joined the technical service of the Aircraft Standards Committee in the office of the national chairman. . . . DR. CARL F. FRISCHE, chief research director of the Sperry Gyroscope Company, has been elected vice president for engineering of the company and HARRY F. VICKERS, president of Vickers, Incorporated, and a vice president of Sperry, has been elected a director of the Sperry Corporation.

EDWARD ALFRED WESTLAKE, CAA, has been named chief of the rules of the air and air traffic control section of the Interim Council of the Provisional International Civil Aviation Organization, and COL. REEDER GLENN NICHOLS, CAA, named chief of the communication section, PICAO. . . . FRANK W. JONES has been named to head the light metal products division of Northrop Aircraft, Inc. . . . CLIFF JOHNSON has joined Douglas Aircraft Company, Inc., publicity department and IRVING KRAMER, formerly manager of the Douglas news bureau, has become publicity director for the Los Angeles Chamber of Commerce. . . . ERNEST SPUHLER has been appointed general sales manager of Fairmount Tool & Forging Company, Cleveland.

JAMES W. EBEN has been appointed director of advertising and public relations for United Aircraft Products, Inc. . . . CMDR. THOMAS M. JONES has been named a vice president of the Air Power League. . . . LT. GEN. NATHAN F. TWINING has been assigned commanding general of the Air Technical Service Command, ATSC headquarters at Wright Field. . . . BRIG. GEN. HAROLD R. HARRIS, former commanding officer of the domestic transportation division of the Air Transport Command, has been awarded the Legion of Merit for his work at that part of the ATC. . . . MAJ. GEN. CURTIS E. LEMAY has been placed in charge of a new staff section at headquarters, AAF, to coordinate all research and development.

MRS. ALICE ROGERS HAGER, Washington editor of *Skyways*, received the Avon Award for Women of Achievement at a dinner given by the Aviation Writers Association. . . JOHN D. WEAVER, former Chicago plant manager for Douglas Aircraft Company, has resigned to enter private business in manufacturing food machinery . . . CHARLES J. DeBEVER has resigned as parchute specialist of Civil Aeronautics Administration to become a sales supervisor of General Textile Mills, Inc.

G. A. HUGGINS, formerly plant manager of Douglas Aircraft Company's Long Beach factory, has been named manager of the company's Santa Monica plant. . . . CHARLES L. HARRIS has been named manager of distributor sales of Manning, Maxwell and Moore, Inc., and NEWTON P. SELOVER will succeed Harris as manager of the Mid-Western district; WILLIAM F. LOOS has been appointed Eastern District Manager, with headquarters in New York for Manning, Maxwell and Moore, and WILLIAM H. BOLIN has been appointed Mid-Eastern District Manager, succeeding Loos. . . . FRANCIS A. CALLERY has resigned as financial vice president of Consolidated Vultee Aircraft Corp. to become associated with Lehman Brothers. Callery will remain as a director and member of the executive committee of Convair and will continue his activity in the oil business, with headquarters in Fort Worth and Houston. . . . MAJ. GEN. VICTOR E. BERTRANDIAS, former vice president of Douglas Aircraft Company, has returned to the company in charge of export sales.

HAROLD C. SCHOTT has been elected a director and vice president of Cleveland Pneumatic Tool Company. WALTER E. SCHOTT, WENDEL A. FALSGRAF, HARRY C. BURNS and COLMAN HARRIS were elected to the board of Cleveland Pneumatic. . . . DWIGHT S. WALLACE has resigned as executive vice president and treasurer of Cessna Aircraft Company. . . . HENRY E. GUERIN has announced his retirement as plant manager of the Santa Monica plant of Douglas Aircraft Company.

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NEW PRODUCTS

Control for Temperatures

An adjustable, calibrated Cam-Stat temperature control is being manufactured by Paul Henry Company, Los Angeles. It comes in a variety of mountings for adaptation to control of air, gas, liquid or solids. The company claims that little increase in space is required for mountings. There is tamper-proof dial installation preventing changing of adjustable range provided at the factory. A choice of ranges from minus 50 degrees to plus 600 degrees Fahrenheit is available. Also available in 12 amperes, 115 volts A. C. or 28 volts D. C.

Brushes for Smoothing Holes

Power brushes and holders developed and manufactured by the Osborn Manufacturing Company, Cleveland, may speed production on new civilian planes. These brushes, trade-name "Situft," are small, versatile and able to get in difficult places, eliminating some of industry's production bottlenecks. The brushes smooth and clean drilled holes, and remove burrs from threaded holes. The brushes cut costs in half and reduce operating time to three-fourths of previous period.

Grinder for Many Uses

Lempco Products, Inc., is manufacturing a new model ACX multi-purpose grinder, having a wheel-head mounted on two different compounds, each graduated to 180 degrees. The workhead can be moved six inches toward or away from work easily, increasing the swing from eighteen inches to thirty inches. It has both hand and power cross-feeds. The grinder also has two reversible spindle speeds of 80 and 130 rpm. and a two hp. motor on the wheel-head having the spindle and speeds of 6,000 and 12,000 rpm.

Flexible Power Conveyor

Island Equipment Corporation, New York City, has manufactured a small powered-belt conveyor unit in 10-, 5- and 3-foot lengths. These lengths may be coupled together to make as long a conveyor system as desired, and can be twisted around to form any shape. They can convey on level, up or down grade. The whole system can be controlled from the unloading end by positive push button control, and the speed of all units are synchronized as if it were one unit. The conveyor is powered by Power Pac motorized power unit, and is capable of carrying a load of 400 pounds. Three different belts, 12, 16 and 20 inches in width, are available.

Electrolimit Comparator

A new Electrolimit Comparator is being manufactured by Pratt & Whitney, division Niles-Bement-Pond Company, West Hartford, to facilitate a fast and accurate means of inspecting parts. This unit can be combined with P&W Electric Contact Unit for detecting product limits. During the inspection, the operator knows at once if the part is not the correct size. Lights on each side of the meter show if the parts are undersize or oversize, but if the parts are within normal range, the lights will not come on.

Two-Piece Lockbolt

Huck Lockbolts, a new type fastener, are being manufactured by Huck Manufacturing Company, Detroit. They are quickly installed and form a permanent fastening which cannot loosen under vibration or fatigue loading. The lockbolt first draws the work tightly together, fills the hole when required, then is permanently locked in place like a rivet. It comes in two parts: one is a pin, coming in several desired types, locking grooves, and pull grooves which fit the jaws of the driving gun; the other is a locking collar. Provision for hole-fitting permits joints maximum rigidity. Tensile strength is comparable to that of bolts. Details are available.

Electronic Bore Gauge

A new electronic bore gauge which measures the diameter of tube, gun and other cylindrical interiors by direct contact is being manufactured by the Chrome Gauge Corporation, Philadelphia. The device is accurate to the .00005 of an inch. The gauge is inserted into a bore where it checks by contact all interior surfaces, and the results are transmitted to a precision indicator. The gauge consists of a projection rod mounted on a stabilized frame and contains a delicate, flexible point.

Slide Rule Of Dowmetal

A new slide rule, the Deci. Point Slide Rule, is being marketed by Pickett & Eckel, Chicago. The new rule will determine the exact location of the decimal point in involved expressions with results up to nineteen places. The slide rule is manufactured of lightweight Dowmetal, making it more accurate, since it is not affected by climatic conditions of heat, cold or moisture, and there is no perceptible warping, swelling or other distortion. Deci. Point's highly simplified arrangement of scales so facilitates computation that persons of limited mathematical knowledge can evaluate and point off problems containing cube and square roots, logarithmic and trigonometric factors.

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Dynamometer tests have registered substantial increases in h.p., while maintenance records tell of 5 to 7 times normal cylinder life and 3 to 5 times average ring life—a sure way of reducing lay-up time and other maintenance costs.

The "Spar-Tan Chrome Process" is an exclusive method of electroplating such vital, shock-absorbing parts as Aircraft Cylinders, Diesel Liners, Crankshafts and Camshafts—the surface of the plated part containing hundreds of microscopic indentations to retain the oil.

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AIR TRANSPORT

Air Traffic Boom Expected in 1946

By E. H. PICKERING

The few months during 1945 in which priority and similar restrictions were removed from airline travel gave ample indication that the coming use of air transportation will be greater than most optimistic predictions of the past years.

There is ample reason to believe that airline space will be difficult to obtain, despite addition of equipment which will roughly triple presently available seating capacity. Newer planes will offer speeds up to 300 miles an hour, practically double the DC-3's best average. Greater luxury and comfort in these larger planes through increased roominess, smoother flying, improved meal service will add to the attractions of air travel. Greater dependability through increased schedule completions attained by use of VHF radio communications, radar-guided Ground Control Approach systems, instrument landing installations, fog dispersal methods and the like, will result in still increased use of the airlines. Fare reductions started last Fall are apt to continue with good possibility of a rate of about four cents per mile by year's end, thus opening air travel to an ever expanding market.

Air transport progress is snowball-like in that each advance brings more passengers which in turn create demand for larger aircraft and more frequent schedules resulting in increased air travel and in lower fares. The new year should keep the personnel managers working at top speed to add reservations clerks, ticket agents, mechanics, and all other categories.

The year should also see the first operations along some of the feeder routes whose cases were heard during 1944-45. CAB decisions in the Rocky Mountain, Pacific Coast, Texas-Oklahoma, North Central, and Southeastern States cases may be announced beginning in early Spring. Some of the carriers awarded routes should be in operation within three months of the time the decisions are announced.

Air freight, making its first awkward steps in 1945, should become a husky toddler in its second year. Greatest impetus will come from the non-scheduled, contract operators such as the Flying Tiger Line and others who are out to prove to the airlines that bulky and moderate-valued merchandise can be carried cheaply and efficiently by air. Right now they have the airlines worried, and by year's end we can expect to witness a cat-and-dog fight with no holds barred. The airlines feel that they have prior rights from many years of air transport service. The newcomers feel the airlines were lax in not developing this lucrative business.

As regards international transport, the future is clouded by inter-governmental squabbles on landing rights, rights of passage, rates, reciprocal agreements making all parties hold back to the abilities of the most laggard carrier, etc. With all restrictions smoothed out, there should be significant advancement.

Traffic Up Sharply in 1945

The table below indicates the progress made during 1945. Figures are for actual count through November plus a December estimate by the Air Transport Association.

	1944	1945	Increase
Revenue passenger miles	2,246,894,489	3,525,619,866	56.9%
Revenue miles flown	144,240,440	219,169,459	51.9%
Revenue passengers carried	4,575,716	6,621,842	44.7%
Mail ton-miles	51,143,837	72,231,126	41.2%
Express ton-miles	17,231,126	24,505,243	38.4%

C. E. WOOLMAN has been advanced from vice president and general manager of Delta Air Lines to the president's position, succeeding C. E. Faulk, who has become chairman of the board.

In the first eleven months of 1945 the domestic airline fleet reached a total of 402 planes, forty-three more than they had at the time of Pearl Harbor. By the end of December this was expected to reach nearly 100 more with completion of conversion of surplus planes. Another 100 planes in overseas service would bring the country's air transport fleet to nearly 600 planes. By the end of 1946 deliveries of planes on order is expected to reach 1,414 providing 58,284 passenger seats.

The year 1945 saw air routes in the U. S. increased by 4,034 miles to an all-time high of 66,971. Fares were reduced to an average 4½ cents per passenger-mile and express rates dropped 13 per cent.

News in Brief

The CAA and the Air Transport Association's Operations Committee have agreed upon a series of tests of off-airway traffic control for long-range operations. Approach channels at designated points will be entered and left by prescribed procedures. . . . Two-man crews will be used on DC-4 operations after an interim familiarization period wherein flight engineers will be utilized. . . . Minnesota's Congressman Harold C. Hagen introduced two bills in the House calling for reduction in airmail postage from eight cents to five cents, and for a three-cent airmail postcard. . . . The Glenn L. Martin Company has proposed a new service to airlines using Martin 202 equipment whereby all overhaul work would be handled at the Martin factory. Martin would provide a pool of "loan" aircraft for the airlines to use during the period their planes are in for a major.

Eastern Air Lines has applied for a series of routes extending from their presently certificated points of San Antonio and Beaumont, Texas, through the southwest to San Diego, Los Angeles, and San Francisco. . . . Continental Air Lines announces February 15 for the start of service over their new route from Tulsa, Oklahoma, to Hobbs, New Mexico. Intermediate points to be served will be Oklahoma City, Wichita Falls and Lubbock. Service over presently certificated routes will continue through Hobbs to Carlsbad and El Paso. . . . All American Aviation has adapted a Noorduyn Norseman to air pick-up service with resulting 750-pound increase in payloads over the presently operated Stinsons.

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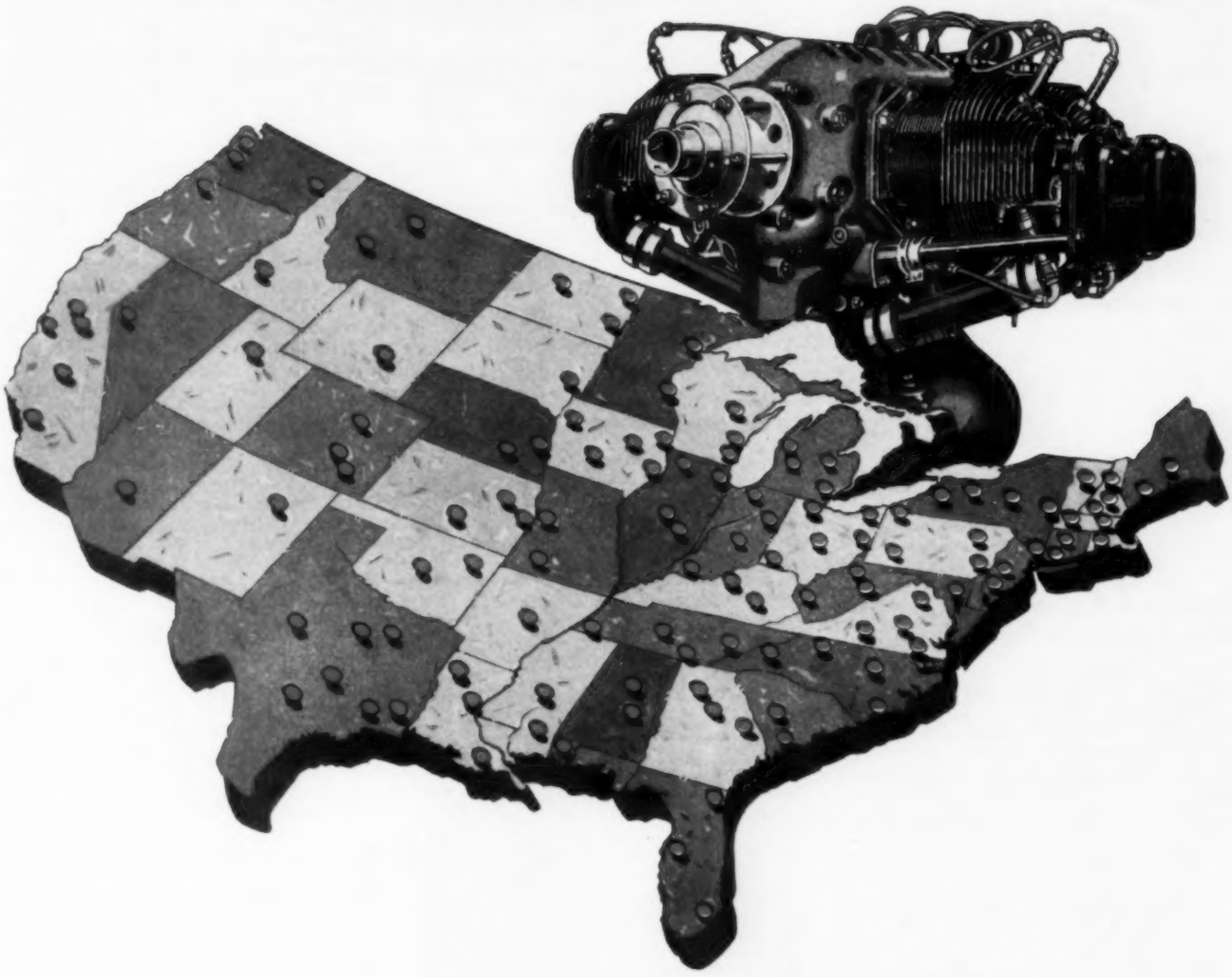

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Continental Motors Corporation
Aircraft Engine Division
MUSKEGON, MICHIGAN

FOUR-PLACE SKYSEDAN IN $3,000 CATEGORY is Piper Aircraft Company's latest design for development during 1946. Powered by 175-hp. engine, the proposed "family" plane would have a 125-mph. cruising speed, retracting landing gear and flaps.

8,200 First-Line Planes in Peacetime AAF Strength

The Army Air Forces plans a peacetime force of 8,200 first-line operational planes. Personnel strength of the force, composed of twenty-five groups of strategic superbombers, twenty-five fighter groups, five medium and light bomber groups, ten transport groups and five tactical reconnaisance groups, would be 400,055 men. Second-line units including Organized Reserve, National Guard and ROTC organizations, would require about 6,000 planes.

Southern Aircraft's New Transport Flying

Southern Aircraft Corp. is test-flying a new twin-engine, six-place executive transport of high wing design it plans to produce at its Garland factory near Dallas. Ranger 200-hp. engines on the prototype are to be replaced by 270-hp. Continental engines on production models. The all-metal transport, with a distinctive retracting nosewheel, weighs about 3,000 pounds empty and grosses about 5,000 pounds. It has a forty-two-foot wingspan and a length of twenty-nine feet three inches. C. T. Prescott is Southern's test pilot.

Southern Aircraft also is developing an all-metal personal airplane of radical design yet to be announced.

AIA to Sponsor Two Air Shows During Year

The Aircraft Industries Association of America will sponsor two national aircraft shows, one in the East and one in the West, in the Fall of 1946. Ernest R. Breech, president of Bendix Aviation Corporation and chairman of AIA's air show committee, said most manufacturers would not be able to display their products until late October or early November. An earlier show would tie up essential men in producing and dealing products before the materials are available. Breech emphasized that most manufacturers were confronted with the problem of filling backlog orders, and that the AIA committee believed that late Fall would be the best time to hold an air show.

Pioneer of AAF's Newest Instrument Training System Heads CAA Safety Bureau

Col. Joseph B. Duckworth, former airline pilot who modernized the Army's instrument flying training system at Bryan Army Air Field, Texas, has been appointed director of the safety bureau of the Civil Aeronautics Board. Colonel Duckworth, during his Army service, was concerned directly with safety of flying, particularly through the development of a new and improved system of instrument flying training for the AAF, which he directed. He was a member of the All-Weather Air Forces Board and president of the AAF Instrument Flying Standardization Board, and wrote many regulations relating to safety of flight in military operation. He received the Air Medal for being the first pilot to fly through the center of a tropical hurricane.

Henry Lloyd Child has been appointed executive secretary to the advisory committee on Non-Scheduled Flying. He was formerly manager of the flight test division of the Curtiss-Wright Corporation and one of the nation's best known test pilots. Child succeeds W. Jack Nelson, who resigned last October to become a distributor of small airplanes.

GENERAL CARL SPAATZ, commander of the U. S. Strategic Air Forces in Europe in 1944, has been awarded the Collier Trophy for outstanding achievement in aviation for 1945. The citation says, "To General Carl Spaatz, for demonstrating the airpower concept through employment of American aviation in the war against Germany." Gen. Spaatz is expected to succeed Gen. H. H. Arnold as chief of the AAF. Rear Admiral Luis de Florez, USNR, was the winner of the trophy in 1944.

Record Turnout for Florida Maneuvers

Between 1,200 and 1,500 lightplanes were registered for the flight tour to Miami, Florida, for the All-American Air Maneuvers. This number is more than have ever participated in the gathering before. It is sponsored by the Gulf Oil Company. The tour, which runs to January 20, was open to planes of 125 hp. or less. Four airlines and eleven aircraft manufacturers co-operated in the program, including Aeronca, Globe, Luscombe, Piper, Taylorcraft, Stinson, Ercoupe, Culver, Commonwealth, Funk and Harlow.

Air Scout Pioneer Wins Brewer Trophy

The Frank G. Brewer Trophy of the National Aeronautic Association has been awarded to Dr. Huber William Hurt, director of program development and research for the Boy Scouts of America. The award was for Dr. Hurt's outstanding contributions to the education of American youth in aviation during 1945, and for his work in setting up the Air

Fourteen Flight Courses for Tennessee Students

Tennessee division of aeronautics education of the state department has approved flight scholarships for fourteen students of Madisonville, Tenn., High School. The aviation courses are part of the high school course, and taught by Miss Mae Kimbrough. Cook's Aeronautics Service at Knoxville Municipal Airport is teaching the students, and CAA has fully approved all planes and instructors. These scholarships are part of the state-wide program sponsored by the state department of education and the Tennessee Bureau of Aeronautics, and 600 scholarships have been given to high school students throughout the state.

Stall Indicator

A lightplane instrument device to warn of impending stalls has been perfected by Daniel J. Colokathis, 24-year-old Army Air Forces veteran now attending Parks Air College. The instrument, located slightly back of the leading edge of the plane's wing close to the fuselage, causes a warning horn to blow and a red signal to light up on the instrument panel when the plane approaches a stalling position. The devices anticipates stalls out of turns both level and climbing, and at high speeds as well as during take-off. The new device has been named the "Colometer," and its details are still kept secret by the inventor and his assistants.

BOOK REVIEWS

Aircraft and Engine Mechanics' Manual, *by Charles A. Zweng, published by Pan American Navigation Service,* 12021 *Ventura Blvd., N. Hollywood, Calif., price* $3.00.

A new 11th edition by the well known aviation authority, especially written to prepare the applicant for both engine and aircraft ratings. Included are the CAR pertinent to the respective ratings.

An important feature of the book is the complete typical multiple choice examinations covering all phases of the CAA written test. This text should prove as valuable for instructors in ground schools as for applicants for mechanic's ratings.

Aeronautical Training, *by Charles A. Zweng, published by Pan American Navigation Service,* 12021 *Ventura Blvd., N. Hollywood, Calif., price* $3.00.

A new revised "Quiz system for Commercial Pilots" covering the field of general aeronautics. Especially written to prepare the private and commercial pilot for the government examination. Typical "multiple choice examinations" are included, covering Civil Air Regulations, Aircraft, Aircraft Power Plants, Meteorology and Navigation.

Aerial Navigation, *by H. E. Benham, published by John Wiley and Sons, New York City, price* $4.00.

A book designed to provide students of aerial navigation with a practical text for use in their study. The author's object has been to dispel the prevailing idea that navigation, particularly celestial navigation, is a mysterious and difficult science, and at the same time to avoid the substitution of rules of thumb and jingles for explanations.

Numerous illustrations and charts are found in its 344 pages.

Meteorology for Airmen, *by Charles A. Zweng, published by Pan American Navigation Service,* 12021 *Ventura Blvd., N. Hollywood, Calif.,* 1945 *Edition, price* $3.00.

This book is intended for pilots who need a workable knowledge of meteorology for their daily flying. The subject is presented entirely from the pilot's point of view. A large amount of mathematics has been eliminated, and necessary technical material has been simplified to the last degree to provide the student who must learn the subject of meteorology by himself with the best help possible.

Included in the appendix are questions with answers, also a section of typical examination questions.

NEW LITERATURE

The B. F. Goodrich Company, *Akron, Ohio,* has just published an illustrated thirty-eight-page booklet on industrial tires under the title "How to Save Money on Industrial Hauling Jobs and Equipment." Description with text and pictures of each tire in the B. F. Goodrich industrial line is followed by complete data on each tire. Copies are available upon request.

Hagan Corporation, *Hagan Building, Pittsburgh, Pa.,* has issued its first bulletin on the Thrustorq, new air-operated measuring device for engine horsepower, applicable to aviation and automotive fields. The bulletin, No. 9345, limits itself to use with dynamometers. Copies may be had by writing to Thrustorq Division.

Ampco Metal, Inc., *Milwaukee 4, Wisconsin,* has issued Bulletin 58, "Ampco Metal in Dies," which describes and illustrates the use of this modern aluminum bronze alloy for die service. Write for your copy.

Mining and Manufacturing Company, *St. Paul 6, Minn.,* is distributing a new twelve-page booklet entitled "Faster, Better Finishing of Metal, Plastic and Glass," which describes the 3-M Wetordry Method of precision grinding and finishing at high speeds. Copies available free on request.

Island Equipment Corporation, 101 *Park Ave., New York* 17, *N. Y.,* originators of "Spot Conveying" has just issued a comprehensive two-color bulletin on their new Improved Power-Flex Unit System. It contains much information of interest on Spot Conveying. A copy will be sent to anyone requesting it on their business stationery.

Early Powerplane Fathers, *by A. F. Zahm, published by University Press, Notre Dame, Indiana.*

This little book of thirty-nine pages brings together material written at various intervals and in part published as magazine articles. The text emphasizes the work of three nineteenth-century engineers eminent in powerplane evolution—W. S. Henson, A. Goupil and C. Adler.

10 YEARS AGO in *Southern Flight*

ARTICLES: "Independent Oil" brought out that major oil companies and the independents were utilizing the airplane as a necessary part of their business, and that more and more oilmen were beginning to use airplanes of their own. The independent operators were the largest group in industry to accept the airplane as a business vehicle. Time saved, good will for the company and advertising for flying were accomplished by the use of planes by the oilmen. . . . A story on meteorology gave a comprehensive introduction to the science, with diagrams to illustrate technical and general data. . . . A 5,000-mile airplane trip by Mr. and Mrs. Kenneth Rearwin revealed the Southwest as an ideal place for aviation. The trip netted eight airplane sales.

EDITORIALS: C. R. Smith, in a guest editorial, stressed that the airlines told passengers the truth, especially about the weather, and stated that there should be no doubt in a passenger's mind that the trip was not safe. He termed meteorology a science, making airplane trips predictable and safe. . . . A call for the aircraft industry to band together and try for a square deal, and not division in the ranks, was made. Other businesses had organized and had received rights.

BRIEFS: The eighth annual Miami All American Air Maneuvers and races were held, with about 800 Army, Navy, Marine, Coast Guard and civilian planes taking part. The races were sanctioned by the National Aeronautic Association and received official recognition. . . . Stearman contracted to build ten planes for Argentina. . . . American Airlines placed an order for ten DST Douglas sleeper planes, being the only company to have a fleet of sleepers.

PERSONALITIES: Wellwood E. Beall, Far Eastern manager for Boeing Aircraft Company, said on his return to the States that both commercial and military aviation in China were making progress. . . . Hall L. Hibbard, vice president and chief engineer of Lockheed Aircraft Corporation, returned from Berlin after delivering an address to aeronautical engineers in the German capital. . . . Harry G. Stoddard, president of Wyman-Gordon Company, was elected to the board of directors of United Aircraft Corp. . . . Col. Jack Lapham made tours of South Texas cities to aid in improving airports, air marking and flying instruction. . . . Mrs. Melba Beard was credited with winning the Amelia Earhart trophy race, at the National Air Races, but first prize was given Mrs. Edith J. Bernson—and error was made by the timing officials. . . . Major James H. Doolittle stopped at San Antonio on an unofficial visit. . . . J. T. Verlin succeeded Ben Lichty as manager of Lambert-St. Louis Airport.

NEW DEAD RECKONING EQUIPMENT

For Land, Sea and Air

Flight Instructor by CHARLES A. ZWENG

Author of "Radio & Instrument Flying," Etc.

This important new book will prove invaluable to the Instructor as well as to his student. All maneuvers are fully covered and illustrated. The new "series of eights" and "series of turns" are shown. New features include, "Flight Examiners," and "Methods of Grading." Other new sections cover the new typical "multiple choice" examinations given for "flight instructor rating."

Price of Flight Instructor Manual $3.00. DeLuxe, as shown above, $4.00.

PRIVATE PILOT EXAMINATION: (New July 1, 1945) by Zweng. First in the field. "Multiple Choice Examinations" covering scope of written test. Only $1.00 postpaid.

MANUAL OF THE E-6B COMPUTER (New) by Allan C. Zweng. An essential text for every airman and Instructor. De Luxe Edition, $2.00.

NEW DALTON NAVIGATION COMPUTER (Type E-6B), $10.00.

AERONAUTICAL TRAINING by Zweng. (Important Notice) The New Private Pilot Examinations pertinent to Revised CAR Effective July 1, 1945, to include Parts 60 and 43 are now covered, with "typical new Multiple Choice Examinations" for both Private and Commercial included. $3.00 postpaid or C. O. D.

AIRCRAFT and ENGINE MECHANICS: Examinations, New (Zweng) Quiz Book now covers typical Multiple Choice examinations fully illustrated with necessary diagrams. Used by Lockheed, Douglas, Northrop, Ryan and outstanding schools. Why fail? Only $3.00 for both examinations, and CAR.

COX & STEVENS Dead Reckoning Navigation Computers De Luxe with Instructions. $35.00 (Used on transoceanic flights).

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Washington Confab to Decide CAP Future; AAF Neglect Charged

A showdown meeting of the forty-eight Civil Air Patrol Wing commanders and Army Air Forces officers in charge of CAP activities was to be held in Washington on January 10 with CAP leaders hopeful of AAF action to stimulate renewed activities throughout the volunteer organization.

For some time various CAP leaders have openly expressed concern over AAF apathy towards their program. One example of this concern was an open telegram sent to General H. H. Arnold by Lt. Col. D. Harold Byrd, Texas Wing Commander, suggesting that the forty-eight Wings should either be supported 100 per cent by the AAF or eliminated. "No one in the AAF" is devoting any time, thought or consideration to the CAP, and CAP is being allowed to "die on the vine through official neglect and disregard," Colonel Byrd complained, pointing out that only General Arnold's personal review and directive can avoid "decimation of the Civil Air Patrol."

Cross-Country Routes for Lightplanes To Be Airmarked by CAP Wings

A series of transcontinental routes for private fliers, located off heavily traveled Federal airways, will be marked by Civil Air Patrol units from coast to coast. The project stemmed from a desire to accelerate CAP airmarking, which, instead of being done in a haphazard pattern, can most effectively be spotted across the nation along a series of national flyways for lightplanes. Involved also will be local planning by CAP units for emergency fields and finished airports built by CAP members. The project calls for co-ordinated planning between numerous CAP Wings.

Henry King Heads New CAP Co-Ordinating Group

Col. Harry H. Blee, acting national commander of Civil Air Patrol, has recently appointed a co-ordinating committee on unofficial activities of CAP. The committee members are: Chairman, Lt. Col. Henry King, Beverly Hills, Calif., a director with Twentieth Century-Fox studios; Lt. Col. Harry K. Coffey, Portland, Ore., aviation manufacturer; Lt. Col. Ralph Earle, Philadelphia, Pa., president of a finance corporation, and brother of the former governor of Pennsylvania; Lt. Col. Wright Vermilya, Jr., Lantana, Fla., director of the state aviation division, and Lt. Col. L. A. (Jack) Vilas, Chicago, Ill., airport lighting equipment company executive.

Kansas School Adopts CAP Training Course

St. John's Military Academy, Salina, Kansas, has incorporated a full Civil Air Patrol training program into its curriculum, offering air education and military training, according to Lt. Col. J. Howard Wilcox, Kansas Wing Commander, CAP. Col. R. Clem, superintendent of the school, is enthusiastic about the advantages that CAP can offer the Cadets. Many of the aviation classes at the school are being taught by officers stationed at Smoky Hill Army Air Field.

CAP Seen as Fitting Universal Training Program

To acquaint all Wing members with the possibilities of CAP in the compulsory military training program now being contemplated, Lt. Col. Frank E. Dawson, North Carolina Wing Commander, has issued the following statement in part:

"Compulsory military training is being discussed all over the United States pro and con by educators, Congressmen, ministers, and mothers and fathers, as well as single people who have no children or responsibilities.

"Surely Civil Air Patrol believes in preparedness, as we have had a training program that would demonstrate that we, as an organization, do believe in preparedness and the defense of our country for the future. Civil Air Patrol could fit into the picture in a most comprehensive and successful way with the proper financial support from the Federal Government, as well as state governments, in training the Youth of America in defense of our country and preparedness.

"a. First, we have all the necessary directives that have been outlined by the Army Air Forces to train in a military manner the Youth of America.

"b. Second, we have the organization in forty-eight states set up that, with the proper financial support, and with the proper assistance from Army reserve officers, Naval reserve officers and Marine reserve officers, to have a wonderful training program."

Air Power League's CAP Work Expanding

A four-page pictorial review of the work of Civil Air Patrol was carried in the December Bulletin of the Air Power League. Air Power League organizers are currently in the field forming local clubs in communities, and aiding CAP units. Initial organizations are under way in California, Connecticut, Florida, Illinois and Texas. Further expansion will be undertaken for every state. The first Air Power Club was formed at Paterson, N. J. Recently, Maj. Gen. Robert W. Douglas, Jr., commanding the 1st Air Force, addressed a joint meeting of the club and CAP, and presented six CAP Cadets with flight scholarships, which were financed by the club.

Rocky Mountain Flyways To Be Mapped by Colorado Wing Units

"Bad wind" areas over the Rocky Mountains will be mapped by the Colorado Civil Air Patrol beginning next summer, and the maps will be distributed throughout the country to let private fliers know where the good as well as the bad sections are located. Also, some of the mountain passages are to be mapped, and blind canyons shown, as some of the mountains are too high for the smaller planes to fly over. It is felt that such projects should be undertaken by all Wings.

Missouri and Massachusetts Wings have already done some mapping, showing swamps, badlands and the like. Charts should be available to everyone, telling lightplane pilots where safe and unsafe areas are located.

The mapping would also aid in the nationwide CAP routes, which are off Federal air routes. Airmarkers, emergency landings and such essential items as necessary should be shown to make the transcontinental CAP route workable and available for private planes.

Cross-Country Work Spurred by Pennsylvania's First Tactical Squadron

Group One, Pennsylvania Wing, has activated a unit composed only of Civil Air Patrol members who own airplanes. Known as the First Tactical Squadron, under command of First Lt. Marty Green, the main purpose of the unit is to plan detailed cross-country group flights. The program is expected to increase the navigational efficiency of the pilots; with a program calling for a flight every two weeks, pilots are kept alert. The unit has thirty airplanes of all types enrolled, and has been getting nearly 100 per cent turn-out on all flights. The planes are hangared at nine fields, with each field called a base, and a flight leader is appointed to each base. The flights have been instrumental in renewing interest in CAP. To keep interest in the flights, prizes are given to each plane reaching the field of destination on ETA plus five minutes. There is also a prize to the flight leader who brings in the largest number of planes from his base.

Shockey Succeeds Patterson as Oklahoma Commander

Lt. Col. Moss Patterson, Oklahoma Wing Commander, and Major David Jay Perry, executive officer of the Oklahoma Wing, went on the inactive list last month. The new commander of the Oklahoma Wing is Major William H. Shockey, who has been liaison officer for the Wing.

National Commander of Civil Air Patrol, Col. H. H. Blee, stopped in Oklahoma City last month in his tour of the state wings. He reported that CAP "will continue on," and was optimistic about the future program of CAP. He stated that new policies and the postwar program for the organization were in the process of getting to print, after which they would be distributed to the various Wings.

Two New Florida Squadrons Activated

Lt. Col. Zack Mosley, Florida CAP Wing Commander has announced the activation of two new squadrons, Avon Park and Middleburg. Lt. Archie Budd was appointed squadron commander of the Middleburg unit and Lt. Douglas Perry of the Avon Park squadron, bringing the total number of squadrons in Florida to twenty.

Col. Howard Angus, executive secretary of the Air Power League spoke to the Florida CAP members recently at a wing staff meeting held at Fort Lauderdale. He outlined the purposes of the organization and advised that Florida had been selected as one of six states in which Air Power Clubs would be organized as the beginning of organization on a national scale.

By TONY HAGMANN

BIGGEST LITTLE TOWN IN AVIATION is Macksville, Kansas, population 799, according to Col. J. Howard Wilcox, commander of the Kansas Civil Air Patrol Wing. At a recent celebration, a 1946 Aeronca was given away as a prize. It is shown here parked on the town's main street. It attracted more attention than a ferris wheel (background). Macksville already has a temporary airport west of town and plans a permanent one east of the city limits. —(Paul Threlfall Photo.)

Dallas—*by Vida Foster.* Postwar activity in a big way is in full swing on "hangar row" at Love Field in Dallas. The opening of the field to private planes is of prime importance and we learned at the control tower that there has been considerable increase in lightplane traffic there. Up to the time of our visit control tower officials complained of only one private plane owner who disregarded the rules and temporarily snarled up traffic. They told us that private fliers as a whole have been most co-operative.

R. B. Kenty took time out between trips to escort us through the entire Air Associates operations. We were much impressed by their thorough organization and handling of orders for accessories and learned of their plans for a complete super de luxe sales room where everything from precision instruments to flying clothes will be on display.

The Dallas Aero Service, of which Major Bill Long is president, is going full blast on their reconversion program and as we go to press they are turning out beautifully appointed executive type ships, not only for private owners but for Mexican and South American airlines. Believe us when we tell you those Lockheed Lodestars look a lot different when they go out from Dallas Aero Service than when they come in. Not being mechanically minded, the phase of reconverting which impressed us most is the transition of the interior from the appearance of the inside of a huge fish carcass to plush upholstered seats, fold-away card tables, compact bars and leather lined little rooms in the rear of the fuselage. We believe everything they tell us about the condition of the engines after seeing the way they are dismantled, cleaned, examined and reassembled.

Southwest Airmotive seems to think they can render much better service when their new buildings are finished, but it seems to us that they are doing a very thorough job of reconverting in their present set-up. We didn't have time to count all the parts that go into a complete engine, but we did take note of how neatly they were cleaned and arranged on three-tiered carts ready to be reassembled.

We found George Clay hard at work in his new Porto-Fab Company site, erecting all-metal, individual hangars and pre-fabricated houses. Porto-Fab manufactures a complete line of all-steel buildings ranging from airport boundary markers to all types of farm buildings.

Mustang Airport is alive with plans for expansion and improvements now that the war is over. The many friends of "Toots" Womack will be glad to know he is back on the job. We learned from N. T. Womack that, contrary to rumor, Mustang does NOT charge a buck a quart for oil and that if the man who flew NC 57071 in to Mustang will contact him, he is due a refund. It seems Mrs. Womack tried to abide by the OPA ceiling on oil and looked up the wrong classification.

Ed Slover, Slover Flying Service, White Rock Airport, invited us on the next sunrise breakfast of his flying club. Early on a Sunday morning in December a group of twenty-five people in fourteen airplanes took off from White Rock and headed for Corsicana to meet in the Navarro Coffee Shop for breakfast. Which is what we call a mighty good way to get in a little cross-country flying and have fun, too. Charlie Hale got lost (as usual) and came in with engine wide open which called for some special review from his instructor. Major Jim and Al Rose Line flew over from Bell Branch to join the party. The group went on record as being unanimously in accord with a national airmarking program, and when we consider the opinion of people like Joe Allison, a private pilot with over 500 hours to his credit, Jo Myers, ex-WASP who is working for her instructor's rating, Civil Air Patrol Lieutenants Barney Gibbs, Raymond Scott and L. E. Woods, it's high time something should be done. Others in this party included William Harold Goodman of Hillbilly band fame, J. Archer, Charlie Childree, Jimmie Allen, Christine Brink, Jack Sides, Mr. and Mrs. Lee Poole, M. H. Hanes from the Control Tower at Love Field, Olin Green, W. P. Rayburn, Leo Shockley, E. C. Tunnell, L. C. Bowie, F. Baughton, and Mr. and Mrs. Joe Love, who flew down in a P-popper Aeronca "K." Yes, there's one still around.

All you private fliers who also claim to be dude ranchers will be interested to know that the new airport at Bandera, Texas, in the heart of the dude-ranching country is in a fair state of completion and is now being used by private plane owners.

HIGHLAND PARK AIRPORT, Dallas' newest, is being constructed on 152 acres four miles northwest of Mustang Airport and seven miles northeast of Love Field. Major J. A. Hudson, recently released from the Air Transport Command, is building the new field as a private flying center. A 2,400-ft. north-south runway and a 1,900-ft. east-west runway are being hard-surfaced but will not be ready for traffic for some time yet, with the opening date to be announced.

El Paso—International Aviation Day was celebrated here last month, promoting the Good Neighbor policy between the United States and Mexico, as well as giving about 40,000 persons who witnessed the airport events a thrill of seeing P-80's, P-51's, a B-29 mockup and a Norden bombsight.

More than 425 persons were registered, coming from the United States and Mexico. Among them were L. C. Elliott, of Fort Worth, 6th region administrator of the Civil Aeronautics Administration; Governor Fernando Foglio Miramontes, of Chihuahua; Luis Montes, of Terreon, Mexico with Lamasa Air Lines;

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Stanley G. King, managing director of the American Air Lines of Mexico; Gene McGill, Alva, Oklahoma, president, and Buck Irvin, of Woodward, Oklahoma, secretary of the National Flying Farmers; Senator Salvador Franco Urias, of Mexico City; Rafael Fernandez MacGregor, representing the national secretary of economy of Mexico, and a delegation of mayors of neighboring towns on both sides of the border.

The Army Air Forces had nearly a hundred airplanes on exhibit, including about every type of combat craft. The Navy had a large display, including an R5D hospital plane. One hangar was devoted entirely to planes for private fliers, and the manufacturers' representatives reported "brisk" sales.

Navy aircraft, including Hellcats, Avengers, Helldivers, Corsairs and Privateers, "attacked" the El Paso Municipal Airport. They came in from all sides, and after the event the carrier types flew formation and peeled off to simulate a landing on a carrier. The Privateers demonstrated bombing runs. Then the Army took over, and three P-80's flew a few minutes over the airport.

In the civilian contests, Ed Cordell was first in Class A take-offs, and Captain Kellogg won in Class B. B. F. Hines won the spot landing contest with a perfect score; Claude T. Franklin was second, and Flake Wells was third. Hines also was first in the tape cutting contest, with Earl Crum, second, and C. W. Fairweather, Jr., third. Bob McNellis, El Paso, took first place in precision flight. Phil Babcock won the TWA Trophy for the best all-around flying of a scale model. Donald Hogan won the TWA hard luck trophy.

One feature of the program was contests and exhibits of model planes. W. Lloyd Baab, of Oakland, California, president of the Western States Model Planes Association, was on hand. The winning model plane flew 110.09 mph. It was entered by E. D. Hopkins, and flown by Frank Greene (both from Long Beach).

Another feature of the day was a "guarantee" to make an aviator out of a non-flier after six hours of free instructions in one day. Twenty-three persons applied for the free flying course, and four were selected at random for preliminary tests. Garrett C. Tyra, a veteran who lost his leg at Pearl Harbor, won the free flying course; and Tyra successfully took off and landed his plane in a solo flight after only three hours and ten minutes of instruction. F. L. Stevens, instructor for the Border Aviation Company, was Tyra's instructor.

A Straw Hat Derby was one of the numerous contests. In it the aviators, wearing straw hats, flew in open cockpit planes; the flier who kept his hat on the longest was declared the winner.

The entertainment program included a reception, banquet, a barbecue at the airport and a luncheon at which Mayor D. L. P. Duke of El Paso was the host. Jack C. Vowell was general chairman of the International Aviation Day celebration, which will become an annual event.

Fort Worth, Texas—J. M. Shelby, former district traffic manager for Braniff Airways in Fort Worth before spending three and a half years with the Air Transport Command, has returned to his former post with the airline.

With a ten-year transportation background, he joined Braniff in 1936 as traffic representative in Fort Worth and the same year was promoted to District Traffic Manager. He remained in this position until joining the Army Air Forces in 1942.

Captain Shelby was then assigned to the Air Transport Command headquarters in Washington and served as chief of plane space control for the North Atlantic wing sub unit from June, 1942, until December, 1943.

As executive officer of the European wing for priorities and traffic, he was based in London until returning to Washington in March and Love Field in June of 1944. He served at the Dallas base as priorities officer until his port Chamber of Commerce.

Shelby is a native of Stephenville, Texas, and is a member of the Fort Worth Junior Chamber of Commerce and the Transportation Club.

Kansas City, Mo.—*by Marion Melcher.* Looking out the window, I assume that so many folks hereabouts were "dreaming of a white Christmas" it just had to happen.

Lou Holland's not only attending to affairs at the Holland Engraving Company, but he's back at his old post as chairman of the mayor's aviation advisory board. This is a reappointment by Mayor John Gage. Lou served as chairman until July, 1942, when Uncle Sam wiggled a finger and took him to Washington. While he still wings back and forth on Washington missions, his liveable Lake Lotawana home claims him most of the time.

We not only need education of the youth, we need it among home owners. Ray Klapmeyer and Cy Willock found that out when they had a hearing in the courthouse recently in connection with using Klapmeyer's 500-acre tract out at 125th street and Wornall Road as a small aircraft operation base. The idea of a country club airport progresses until it bumps its ambitious nose against the hard head of the property owner.

The 99's are active again in Kansas City after a wartime closing up of shop. Marie Page was elected chapter chairman; Betty Cox, vice chairman, and Connie Carraway, secretary-treasurer. The average flying time for the group of twenty-nine members is 300 hours each. . . . Nadine Nicholas, working with the Victory Loan campaign, was a might happy young woman when she had a personally-conducted tour through the Navy PB-4Y-2 patrol bomber which made a bond appeal from the air. The voices belonged to the naval aviation officers, and the music which startled the man on the street was 1,000 times as powerful as his home radio.

Fairfax is faced with being a civilian operation shortly, and the city fathers over on the Kansas side decided they'd better know how other cities have met reconversion problems, so Bill Green, the airport manager, is on a survey trip of municipal airports. . . . Ft. Leavenworth's Sherman field had a series of three air shows and open house programs for the public. There were demonstrations of parachute drops, dropping of simulated bombs, a pretended attack on a formation of B-25's and much whizzing over the field at low altitudes. . . . . Bill Brown estimates that there's an increase of 74 per cent over last year in persons leaving planes at the Municipal terminal here. As of October, the airport commissioner estimates that 1,500 passengers were being processed through the terminal daily.

It was Christmas party time for the Kansas City Unit WNAA, and Santa was there with all the trimmings. The semi-annual installation of new members took place in the candlelighted Windsor Room at the Hotel Phillips. Something new in the Unit is the second meeting night each month, which was inaugurated last month. Called a Round Table Discussion, only Unit members meet on the fourth Wednesday of each month. The object is to become better acquainted with the membership, the purposes of the organization, the local aviation needs, and projects to be undertaken.

John Paul Jones of Des Moines wouldn't have any complaint about the sales room and the powder room at Parks Aircraft on municipal airport here. We don't suppose his masterly talk on "Aviation's Tobacco Road" had anything to do with it, but Parks did a real job of decorating.

We not only *wanted* to attend the National Aviation Clinic in Oklahoma City, but, we *did!* Among the Kansas Citians registered were Eunice Mecaskey, Helen Stewart, Marie Tracy, Esther Wirthman and your reporter, all of WNAA, and N. L. Hall, Herbert Howell, Louis D. Sulzbacher, Bill Thom, Parker Van Zandt, George Bailey, Col. Fred G. Betts, Justin Bowersock, Bill Brown, C. H. Burns, Russ Cantwell, Dick Challinor, Pres Doerfler, Mayor John Gage, Jack Frye, Lee Hancock, Ed Johnson, Tex LaGrone, L. B. Littrell, Harold Montee, Bob Moreland, Alberta Trombley, Edgar Smith. . . . and if we've missed someone we're mighty sorry because the Kansas Citians did turn out in number. Wasn't it fun! The lively Tony Hagmann was with us at the press table and we agreed that Oklahoma City knows how to make you feel welcome.

Little Rock, Arkansas—H. S. Nakdimen, president of the City National Bank, Fort Smith, Ark., and W. B. Fitch, also of that city, have secured the Commonwealth Aircraft, Inc., franchise for Oklahoma and Arkansas, they have announced.

Commonwealth will feature the "Trimmer," a three-place, two-engine amphib and the "Skyranger," a two-place dual control single-engine job of the lightplane type.

The Commonwealth factory is located in Kansas. The Oklahoma distribution will be through sub-distributor Thomas S. Cruttenden, Tulsa.

The "Ozark Armada," fifty-planes strong, left the Fayetteville, Ark., airport on a recent Sunday at 7:30 a. m. and breakfasted at 8:30 in Harrison with the air enthusiasts of that city.

Other stops during the day were at Cassville, Bentonville, Rogers, Springdale, and Stilwell, before returning home. Ray Ellis of

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X-C (Cross Country) Computer	4.00	Hyatt's Celestial Coordinator	5.00
E6B Dalton D.R. Comp. (Plastic)	10.00	Elementary Physics as Applied to Aviation	1.00
Mark VII Dalton Computer	5.00	Cox & Stevens Computer	35.00
Mark VIII Dalton Computer	1.00	Flying Facts for the Private Flyer	2.00
D-4 Time-Distance Computer	2.00	Full Career Pilot Flight Log Book	2.25
The Lyon Computer (Plastic)	3.00	Coordinate Azimuth Ring for E6B	1.00
Mark 3A Navigational Plot. Board	12.00	Dean Radio Range Orientator	10.00
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Fayetteville headed the flight which was confined to Northwest Arkansas. Other goodwill flights which will cover the majority of the airports of the state are planned for the Armada.

Ed Garbecz, co-owner with Claud Holbert of the Central Flying Service, Little Rock, has been named as sales director at Grider Field, Pine Bluff, Ark., where some 3,000 warcraft, including fighting and training jobs, are to be sold. Garbecz announced after two weeks the sale of 100 planes.

The surplus property manager has also started a crew dismantling aircraft checked off the flyable lists as saleable. Parts from these dismantled jobs will also be placed on the market.

Garbecz and his partner have been his best customer. Central Flying Service has taken four twin-engine jobs and two others to add to their eighteen aircraft line.

Kenneth Starnes, owner of the Kenneth Starnes Flying Service, Conway, Ark., announced publicly through a feature story appearing in the Arkansas *Democrat* Sunday magazine section that he would pay income tax on $92,000 gross business in the first ten months of 1945. He operates cotton dusting and defoliating equipment, grain sowing planes and covers the entire field of aviation in his 6,000 population city with fifteen ships on the line. His staff trained 2,300 primary pilots during the war and he feels divulging his success this year, when his business reverted almost entirely to commercial work will be an incentive for other small city aviators to found their own concerns and promote municipal or independent airports.

Floyd Al Williams of the Williams Flying Service, Adams Field, Little Rock, Ark., state distributor for Aeronca, has added a new student trainer to his twelve-ship line, has two orders on file for Arkansas Polytechnic College, Russellville, and fourteen other deposits on new jobs.

Arkansas Polytechnic College, Russellville, has more owned training planes than any other educational institution in the state offering pilot and commercial rating courses.

President W. C. Hull of the school announced the purchase of seven government planes including three two-engine jobs and two new Aeronca trainers. Previously the school which trained more than 1,500 pilots during the war had three owned planes. Others were furnishing by the training command.

Los Angeles—A bright yellow Piper Cub is nesting on the second floor of Bullocks, one of Los Angeles' better department stores. It's in the men's clothing section and has not caused any men to adopt the idea of buying a new plane instead of a new suit, but it has caused plenty of conversation. The afternoon we were there, we met Phil Lockwood, who represents Harvey N. Martin, the Piper Distributor in California, Arizona, and Nevada. We also met L. V. Shackett, who told us it wouldn't be fair to the other Cub dealers in the district to mention he represents Rucklos and Company of Pasadena. It seems there is quite a list of Cub dealers, but only one H. V. Martin, who supplied the plane for this new method of selling Cubs.

Upon being queried, Phil admitted there were three kinds of people who dropped in to see the plane: Those who were genuinely interested in aviation; looker-on'ers and sit-downers, and lots of ex-military pilots who made themselves very well liked by saying "Fly in one of those? Jeez, what do you think I am?" A couple of times, the boys have been tempted to tell them, but instead they quoted the expense involved with a Cub versus a P-38. Somehow the "hot-rock" pilots get the idea, and settle down to looking over this trim little plane. Everybody wants to sit in it and when Santa came over the boys let down the rules. Seems they and Santa made a deal, something to do with the 25th of December. (By the way, did you have a nice Christmas?)

Central Airport—United Air School has offices at the end of the row of flight schools on this busy field. It is run by Herb Felding who is as busy as a mother bear in the springtime with twin cubs. Only they sell Swifts. They have students and a charter department headed by Clarence E. Ashcraft. If you were with the 6th Group of the ATC at Long Beach, you might know ol' Ashcraft. He also was at St. Joe for some of their very good instrument stuff. Herb said: "Nuts, there isn't any news around here, all there is is airplane talk." Just then a DC-3 landed, the first DC-3 to make its appearance on this field.

It seems Harry Royster and Slim Kidwell have a repair shop out in back of ten rows of planes, and the DC was coming in to get repaired. It belongs to the Pacific Air Cargo Service and hauls lobsters, orchids and other things. Lobsters are about to be checked off the list. It seems they ship them live and the little devils spit ocean water all over the plane. Salty, bad for corrosion. President of PACS is Harold J. Greinetz. He was in the 8th Air Force, and has a lot of prewar flying behind him, too. His pilot that day was John R. Park, another LA boy, with Army and RAF experience. And a pretty wife.

In rapid succession we met Jack Stricker, who is familiar with all the same places in Texas and Oke City we are (he said to tell everybody hello, especially in Oklahoma City), Charles Jordan of the Texas Company, who drives a Texas license and is learning to fly with Schuckert Flying Service, at Central; Harry T. Hardy of Knoxville, Tenn., (he was chief pilot for the U. of Tenn.) who's giving instruction from the field; Lee Enich who's in North American Aviation's surplus division and collects photographs of all kinds of planes. He has over 2,000 pix. Amazing. Then we met Captain N. E. Mendenhall from Muroc, who read everything we had on Culvers. He just bought a new one and is like a duck looking for a lake, he wants it delivered so much . . . then two Fireballs came in and upset the field. Everybody left their hot dogs in the first saucer, their cokes in the sand and stared. These beautiful planes had Luscombe written real fine on the rudder. The Luscombe man almost blew a fuse he was so pleased, and the Navy ignored the whole thing. It went back to San Diego in nine minutes. Whew.

After this we went back to the United office and flew around with John Hays, Houston, Texas, who is out here with a plane which lays down the rice which is another story in itself, but for a duck club in El Centro, and a lot of rice for a huge company there. He told us China would like to use our methods of planting by air. Too bad there is a Mexican election or something going on over there. Robert Young, Frank James and Mrs. Woodrow O'Dell and this one then made the usual talk about the weather out here, which for your information is just what the C. of C. always says about it. 'Tis wonderful.

We finished our visit by talking with Leo L. Yoder and "Stan" Aronson. They handle the Rocket for California, the Islands, Utah, Nevada and Arizona. Stan is Yoders Field representative and said they have sold ninety-five Rockets for early delivery. We sat down and had a coffee over this news and it reminded us that the most popular airport conversation was along these lines: "It's going to be here next week, absolutely." "Well, we think it will be here in March." "Yes, thirty-day delivery" . . . "Well, I want the first one on the field" . . . This chatter applies to almost every plane. There are so many customers for airplanes and so few of them to go around, at least in December.

Thought for January: According to Jack Stricker, don't paint your plane with dark colors. Remember that black attracts heat—heat dries out your fabric and your wood—and dry fabric or wood means a costly job in the shop and sometimes more than that. It can help you shed a wing. So stick to the colors which bounce the sun's rays back instead of holding them. And you can hold our hand on Tuesday.

Ol' Paul Baynes bought a subscription to SOUTHERN FLIGHT from us, and our day was complete. How are you doin'?

Pinehurst, N. C.—The Sportsman Pilots Association, an international organization of business men who own and fly their own planes, recently held its early winter meeting at the Carolina Hotel here. With Association President W. C. Olsen, of Raleigh, N. C., presiding, some fifty-five members, wives and guests, attended for a business session and banquet. Many of the members flew in and landed at the adjacent Knollwood Airport, recently acquired from the Army and now operated as a commercial field by Resort Airlines, Inc., headed by Major L. C. Burwell, late of the Air Force and Charlotte, N. C. Others came by train, because, while conditions were perfect in Pinehurst itself, the weather over most of the country had been so bad that it prevented as full a turnout of planes as had been anticipated.

The association members fly for business, sport and pleasure, but none of them operate their planes commercially. Membership covers the entire continent, extending to the Pacific Coast and into Canada, and, while there has naturally been little activity during the war, Olsen confidently expects a large increase in membership in the near future. A large percentage of the members served in the armed forces during the war and many others handed over their planes to the government for patrol work, courier service and other uses.

At the Pinehurst business session it was de-

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cided to hold the next meeting at Palm Beach, Fla., in April.

Shreveport, La.—An aviation conference will be held in Shreveport February 20 and 21 for people interested in aviation, especially those in Louisiana, Texas and Arkansas. A program has been planned of interest to private fliers, fixed-base operators, city officials and other interested parties. The program will include a discussion of the National Airport Plan, authorizing and building a comprehensive system of airports in the communities not now being served, according to Harold J. Bryant, manager, aviation department, Shreveport Chamber of Commerce.

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SOUTHWEST AIRMOTIVE

Southwest Airmotive Co.

LOVE FIELD • DALLAS, TEXAS

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Pioneer

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TEXACO

KOLLSMAN PRECISION AIRCRAFT INSTRUMENTS

Willard

Stromberg CARBURETORS

PRATT & WHITNEY U.S.A. DEPENDABLE ENGINES

GOODYEAR

ECLIPSE

LOCKHEED

SHELL

CAMBRIDGE INSTRUMENT CO INC

BENDIX SCINTILLA

PESCO

RANGER ENGINES

FREEDMAN-BURNHAM ENGINEERING CORP.

FLIGHTEX FABRIC

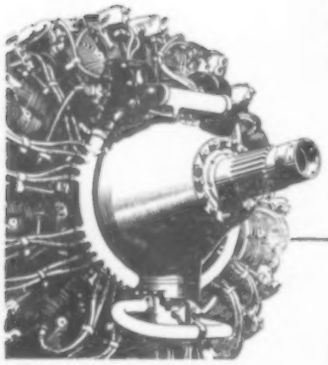
ADJUSTABLE PITCH PROPELLERS

World News
B-29 SETS DISTANCE RECORD
Superfort Flies Non-stop from Guam to Washington
CONSTELLATION IS CHOSEN BY EIGHT MAJOR AIRLINES
MARS HAULS 6-TON CARGO IN RECORD HOP TO NATAL
U. S. SPANNED IN 6 HOU
Stratocruiser Sets Transport Record
CONSTELLATION FLIE
TO PARIS IN 12:57 HOUR
Superforts Fly Non-St
From Japan to W

The power behind the HEADLINES

Look at the records for speed, range, load and fleet efficiency. One engine dominates, one engine makes possible the headlines. One engine has the sheer power, low weight and low fuel consumption to make possible these headlines. It is the Wright Cyclone 18.

Many of the headlines tell of records with military planes—such as the Boeing B-29, Martin Mars, Consolidated B-32 or Boeing C-97. But now that the Cyclone 18 is fully available for commercial use in Lockheed Constellations and other transports, its power will make new records which will be reflected directly in earnings.



WRIGHT *Aircraft Engines*

AIR POWER FOR A WORLD AT PEACE

Wright Aeronautical Corporation, Paterson, New Jersey, U.S.A. • A Division of Curtiss-Wright